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ABSTRACT

This report of the Committee for Educational Research of the Council of Europe consists of five parts. The first section is a presentation of the conclusions and recommendations of a working group of the committee on the training and career structures of educational researchers. The second part is a general overview of status of training of educational researchers by the chairman of the working group. Section three presents a study and alternative proposals on the introduction of educational research into the training of teachers. In the fourth part of the report, proposals are made for cooperation among European nations in the training of educational researchers. The last part of the report is a synopsis of the comments by various European educational researchers on the conclusions and recommendations of the working group. (HMD)

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COUNCIL OF EUROPE

THE TRAINING AND CAREER STRUCTURES OF EDUCATIONAL RESEARCHERS

REPORT OF THE WORKING PARTY
OF THE EDUCATIONAL RESEARCH
COMMITTEE

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INTRODUCTION

In November 1971 the Committee for Educational Research of the Council of Europe arranged in London a Colloquium of Directors of Educational Research Organisations. One of the two main themes of this colloquium was the training and career structures of educational researchers. The questions raised were whether the training of researchers was adequate to the changing situation of educational research, and whether career structures for researchers were appropriate to their role in education. In its plenary meeting in June 1972 the Educational Research Committee decided to ask a group of experts to look into these questions and to make recommendations. Six countries were invited to send representatives and the Working Party came to consist of the following members:

Professor G. De Landsheere, Laboratoire de Pédagogie Expérimentale, Université de Liège, Belgium

Professor A. Léon, U.E.R. des Sciences de l'Education, Université René Descartes, Paris, France

Professor M. Lansky, Forschungs- und Entwicklungszentrum für objektivierte Lehr- und Lernverfahren, Paderborn, Federal Republic of Germany

Professor A. Visalberghi, Professor of Education, University of Rome, Italy

Dr. W.B. Dockrell, Director of the Scottish Council for Research in Education, United Kingdom

Professor K. Härnqvist, Institute for Educational Research, University of Göteborg, Sweden

Professor Härnqvist, who had presented the keynote paper at the London Colloquium, was asked to chair the Working Party.

The Working Party held three meetings: in Paris and Liège in 1973, and again in Paris in 1974. The Chairman reported first to the 1973 meeting of the Committee for Educational Research, and the Working Party's draft conclusions and recommendations were revised in the light of its comments. These preliminary conclusions and recommendations were then circulated to some 60 leading European researchers with a request for their comments.

The report that is now presented consists of five parts:

- conclusions and recommendations which have been developed and decided on by the Working Party as a group after the consultations mentioned,
- a general survey of the problem area by K. Härnqvist, which is a revised and updated version of his background paper for the London Colloquium,
- a study on the Introduction of Educational Research into the Training of Teachers, by G. De Landsheere,

- some proposals for European co-operation in the Training of Educational Researchers, by W.B. Dockrell,

- a synopsis of the comments received on the preliminary conclusions and recommendations.

Before the reader turns to the report, he may be interested in some general remarks about the position and intentions of the Working Party. All its members are experienced researchers who have had opportunities to follow the development of educational research over a considerable period of time in different organisational settings, and who have been involved to some degree in the training of researchers. They represent countries which differ greatly in the development of facilities for research training and in the professionalisation of educational research. From these varying perspectives the Working Party arrived at a quite substantial body of conclusions and recommendations, which moreover have been endorsed by a great number of researchers outside the Working Party. This gives considerable weight to the conclusions and recommendations.

Yet the Working Party is aware that the immediate applicability of the conclusions and recommendations varies between countries. What in some countries may almost look like an idealised description of the present situation may in others seem like a distant goal. The conclusions and recommendations therefore should be taken as indications of a desirable direction of change - a goal that has to be approached step by step.

The Working Party is also aware that the conception of educational research and of its methodology undergoes a continuous change. The change process may reach different phases in different countries or institutions. Presently for instance, reactions against models and explanations of a positivistic type - a paradigm that for rather a long time has had a dominating influence in developed research organisations - are voiced in some countries, whereas others are just about to enter this phase. The Working Party has tried to strike some sort of balance between different methodological approaches but may in so doing be regarded as too conservative by some and too radical by others.

A similar balance is attempted in relation to research training. The Working Party recommends goals and procedures for a systematic training in a milieu where large-scale educational research is performed and team-work is possible. This training situation deviates very much from the rather secluded and "bookish" academic setting of doctoral studies that is traditional in non-experimental fields and where the work required may be rather a private arrangement between professor and candidate. On the other hand, it tries to avoid the dangers of "mass education" at the advanced stage by preserving in research supervision the positive aspects of an apprenticeship system. This position is less likely to become controversial in principle, but since it demands considerable resources it will meet with problems of application. The Working Party hopes that its conclusions and recommendations will be helpful not only in constructing a systematic conception of research training but also in gaining public support for putting it into practice.

Finally the Working Party wishes to express the conviction that the communication between researchers and practitioners in education should be improved. Therefore this report directs itself not only to those who are involved in different capacities in educational research, or in research training, but also to teachers and administrators and those responsible for their training. For all of them an improvement of educational research as a service to education is a common goal.

Kjell Härnqvist
Göteborg University
May 1974

WORKING PARTY ON THE TRAINING AND CAREER STRUCTURES OF EDUCATIONAL RESEARCHERS

CONCLUSIONS AND RECOMMENDATIONS

1. BACKGROUND

Educational research is growing rapidly in most CCC countries, if more in quantity than in quality. At the same time it tends to become more and more oriented towards topics of direct importance for educational policy and planning: at least, those responsible for the supply and allocation of resources for educational research increasingly expect it to be so oriented.

There is a general lack of adequately trained research personnel in all countries, even though this deficiency varies, both in kind and quantity, from country to country. In some, the growth in the volume of research has been so rapid that the existing training system - which qualitatively may be fairly adequate - has not been able to keep pace with this expansion. In others, the output of persons with higher degrees in education and related fields may be large, but their training confined to strictly academic and non-empirical aspects of the subject, which makes it less than adequate for the type of research which we shall refer to here. In others yet, any regular study of education as a field of research is almost completely lacking, and those persons who are nonetheless engaged in such research have to build up their competence more or less by a process of self-teaching. This method may be excellent in individual cases and for outstandingly capable persons, but it does not form a solid foundation for the supply of manpower for the execution of large-scale and policy-oriented research programmes.

In formulating its conclusions and recommendations the working party has had this diversity of situations in mind - a diversity that exists not only between but sometimes even within countries. Any attempt to put forward only such proposals as would be applicable to all situations and in all member countries would have limited their scope so much as to make their content truistic or trivial and their impact marginal. Instead the working party has tried to be concrete in its proposals even though, as a result, some of them apply only to certain particular situations.

2. DEFINITIONS OF EDUCATIONAL RESEARCH

The focus of educational research is the educational process which is studied in its different stages: from the goals and systems set by society and the input characteristics of the students, through the teaching-learning situation, to the evaluation of outcomes.

The different stages are studied at different levels of complexity or aggregation, and from the perspectives of different disciplines. On a macro level the stress is laid upon education's role in society and upon the structure and functioning of the educational system in relation to the goals set for it and the resources allocated to it. On a micro level research deals with the development and characteristics of the individual student as well as the basic conditions of learning. On an intermediate level the teaching situation is emphasised: curriculum, methods and materials of instruction, social interaction in the teaching-learning situation, etc.

Research at these three levels, which roughly correspond to the operations of planning, teaching and learning, need to be based on theory, concepts and methods from different disciplines. On the planning level, for instance, economics, sociology and systems theory as well as history and philosophy have important contributions to make. On the learning level the main scientific support comes from different branches of psychology. At both these levels it is important that the contributions from different disciplines be integrated within the context of the study of education.

On the teaching level educational research is trying to build up its own conceptual and methodological framework. Until recently the theory of teaching was based mainly on speculation and on informal experimentation and observation. Now a body of operational concepts and empirically founded knowledge is being constructed on the basis of systematic observation of teaching and learning in classrooms. Established procedures for curriculum design and evaluation are rapidly emerging. The teaching level provides the link between the macro and micro levels. In a way this work is the most characteristic contribution proper to educational research and one through which a better integration of the educational sciences could be achieved.

The concepts and methods that are used in the study of educational institutions of various kinds may also be applicable to educational influence in contexts other than that of more or less formal instruction. With a slightly broader perspective (to take only two examples), bringing children up in the home and mass communications could be regarded as educational processes and studied within a similar frame of reference. Also alternative approaches to education - even those radically deviating in goals and methods from the established systems and institutions - are a proper area for educational research.

In such a broad field of research as is sketched here, it is not possible for every researcher to reach competence in more than a part of the field. This has important implications for the requirements of training: this must permit a concentration on some aspects, but within an educational framework that helps to integrate the specialised contributions of research with educational theory and practice in general. The theoretical framework should be of an inter-disciplinary nature, but tending to transdisciplinarity (in Piagetian terms), integrating the contributions from different disciplines into one unified structure.

In the recommendations on training which follow, the working party stresses methods and techniques used in empirical research. This approach, however, should not be taken in the narrow sense, for instance, of only including quantitative treatment of observational or experimental data. It may also include the construction and analysis of theoretical models as well as the qualitative treatment of data drawn from the educational process. The kind of research that the working party likes to envisage, therefore, is empirical work which rests on and is guided by theory, just as theory is guided by and rests on systematic observation and experiment.

A distinction that is sometimes made between conclusion-oriented and decision-oriented educational research makes it possible to recognise the various sources from which research questions emanate - either from the theoretical interests of the researcher or from a concern to introduce changes or to monitor current practice. Institutional arrangements often differ according to the distinction between these two approaches. Conclusion-oriented research is expected to take place mainly in universities and to be financed through grants of a rather unspecific nature. Decision-oriented research is generally organised as contract research commissioned from university institutes or from special institutions outside the universities, often closely connected with education authorities at national, regional or local level. The latter arrangement is particularly characteristic of development-type research expected to result in new curricula or new teaching materials.

The working party is strongly convinced that much is to be gained from a close interaction between conclusion-oriented and decision-oriented research. This is most easily achieved if no rigid organisational barriers exist between the two approaches, and

if research training prepares for both roles - that of undertaking research originating from theoretical study, and that of translating the needs of the decision-maker into research problems. From there on the two approaches may lead to the same research operations, and they may result in advances both in theory and practice. Ideally, each research centre should have a range of projects to cover both approaches. The research candidate should be made aware of the special characteristics of decision- and policy-oriented research. In the first place, the need for results that are significant not just in the statistical sense, and for speed of execution, places restrictions on the choice of problems, methods and designs. In the second place, the researcher is expected to state his conclusions unambiguously and in a form that can be related to practical decisions.

3. REGULAR TRAINING FOR EDUCATIONAL RESEARCH

Systematic training for educational research is not available in all member countries, and where it is found its scope and organisation varies considerably between and also within countries. The first recommendation of the working party therefore is for the CCC countries to institute a training for educational research meeting some minimum requirements as specified in the following.

An introduction to research is valuable in all training in education (see section 2); but training for professional researchers, which is the main concern here, normally belongs to an advanced stage, following the first degree period. This advanced stage is planned to have a duration of from two to four years (or its equivalent in part-time study) and result in a degree which in some countries corresponds at present to a doctorate, in other countries to some other type of certification. Here it will be referred to as a "research degree" and the training leading up to it as "regular training for educational research". The requirements for the first degree will be taken up in section 3.2 Recruitment. Specialised training after the research degree as well as complementary training for other groups will be dealt with in section 4.

3.1 Goals

Even with an emphasis on its empirical aspects, the concept of educational research remains a broad one. This implies that the goals of research training cannot be narrowly defined. While recommending a number of goal areas, the working party wishes also to stress the flexibility of the goals contained in each of them. The goals of regular research training should include:

- a thorough knowledge of a discipline, usually one of the social or behavioural sciences;
- an integrated understanding of the educational process and of educational institutions, based on historical, philosophical and comparative considerations;
- an understanding of the functions of educational research, acquired against the background of theory and the history of science, and an awareness of alternative methodological approaches;
- technical research skills of relevance to education and in line with the research style chosen;

- direct experience of carrying out and reporting empirical research within a particular area of the educational sciences;

- skills in communicating with specialists in other disciplines and with educational practitioners.

These goals should not be treated in isolation but should interact in a balanced curriculum.

Since the research degree is also very likely to be used as a qualification for entry to careers other than that of professional researcher, for instance high level teaching and administrative positions, the special requirements of these alternative careers must be considered too. Such an extension of the goal areas may also be relevant from the research point of view in making transfers between research and other professions easier (see section 5).

3.2 Recruitment

Training for educational research - where it is organised - traditionally recruits its candidates from two main groups - those who have acquired a first level university education in the social or behavioural sciences, and those who hold a certificate to teach at primary or secondary level. Some candidates meet both requirements. In some countries, however, there is a trend to recruit educational researchers with other backgrounds, for instance, in linguistics, mathematics, natural sciences, computer science and engineering. This is particularly valid for educational technology and curriculum development.

The proportion coming to research training from each of these groups varies from country to country. In some countries the social and behavioural sciences intake dominates, in others the intake from teachers, whereas the third group is likely to be still in a minority. All categories have their advantages. Those with a first degree in social or behavioural sciences have generally had a better theoretical and methodological preparation for empirical research than the other groups and are likely to complete their research training at an earlier age, which increases their probable research productivity. Their lack of alternative qualifications makes it more likely that they will remain in educational research after training. Those with a teacher's certificate bring with them valuable classroom experience and a more realistic attitude towards problems in the teaching-learning situation. Subject teachers also have the academic knowledge for research on curricula. Those coming from other fields, in addition to broadening the knowledge base for educational research, bring in new ideas and approaches which may also prove productive in education.

Educational research needs each category. Therefore training should be adapted so as to profit from the strong sides and supplement the weak sides of each individual's previous education. This seems feasible within the general framework of the goals recommended in section 3.1. In general there is an advantage in trying to train the three different groups together, in part at least, so that each can learn from the others.

More important than earlier preparation, however, are the candidates' open-mindedness, imagination and motivation for educational research. Therefore measures should be taken to seek out and recruit promising young people wherever they happen to commence their preparation for a career. Where, due to lack of training facilities, selection has to be operated, the candidate's personal qualities, irrespective of his type of preparation, should be stressed.

3.3 Training programmes and their location

In the introduction to section 3 regular research training was placed within the context of advanced university education. This is in accordance with what applies to research training in general. The working party finds it important both for the quality and the status of educational research that its training meets the same standards as that in other fields.

In many instances, however, an adequate training cannot be given without substantial changes in the present university programmes in education. In some cases such programmes do not even exist and have to be built up from scratch. Criticism of existing programmes from the point of view of policy-oriented research usually refers to their "academic" and non-empirical character. Sometimes this results from lack of resources for empirical investigation and perhaps from a "monopoly" of decision-oriented research held by organisations outside the universities. Also traditions within certain university faculties or the interests of individual professors may be responsible for an output of graduates lacking adequate training for empirical research in education.

In the first case, where lack of resources and opportunities for doing empirical research prevails, co-operation should be established with outside research organisations and with agencies commissioning research. In the second case a change of attitudes is necessary. The availability of research funds has already in many cases proved helpful in accelerating such a change. Even where the universities have a strongly autonomous position, national education authorities, whether they plan to or not, exercise an important influence over the policies of education departments. Of course, if the resources for educational research are placed out of the reach of the universities, an insufficient supply of adequately trained researchers will soon become an urgent problem.

However, material resources for doing empirical research are not the only necessary condition for research training within universities to work well. It is also important to create a scientific milieu, where the research students have the opportunity to work on projects and in teams together with trained researchers and specialists from other fields, including educational practitioners. This in turn requires a certain concentration of the students' own research work in areas where experienced researchers are available within an institute. Gradually an institute will obtain a research profile with a "natural" set of special interests. This strengthens the mutual identification of staff and students and contributes to a scientific milieu with a high quality output both of graduates and of research results.

3.4 Contents and methods

In the section on goals the breadth and diversity of educational research were emphasised. Under such circumstances it is hardly possible to draw up lists of recommended contents. Some comments and catch-words, however, can be added to the various goal areas mentioned.

- A thorough knowledge of a discipline: for example: psychology, including learning, development and individual differences. Sociology, covering both macro-social aspects of education and group relations in the teaching-learning situation. Social anthropology, linguistics, economics, computer science are other possibilities, probably less frequently chosen at present.

- An integrated understanding of the educational process and of educational institutions:
  This should be based both on theoretical study and on practical experience from teaching or other educational activities. The theoretical study should include philosophical, historical, social and political aspects, and comparative study of educational systems in different countries related to the basic value structures of those societies. The theoretical study also should include more empirically oriented areas such as planning, the teaching-learning process and evaluation, as well as general theoretical models (systems theory, cybernetics and similar approaches).

- Understanding the functions, types and levels of educational research:
  The relations between research and educational practice; research and development, implementation, dissemination; decision-oriented and conclusion-oriented research. Philosophies underlying different approaches to research.

- Technical research skills:
  As a rule they should cover the methods applicable in the different phases of an empirical investigation - design, instruments, data collection, data processing, statistical analysis including the use of electronic computers; information retrieval and reporting. There are also less formal procedures, such as participant observation, analysis of interviews and documents, etc., to which attention should be paid. It should be observed that research methods are not laid down once and for all, but can be adapted for various research situations. In fact the specific methods may vary considerably between programmes and individuals, partly in relation to the discipline used as a basis, partly in relation to the more general philosophical and methodological approach (research style) characteristic of the scientific milieu of the training institution. A research student must therefore learn to be flexible in his choice of research methods.

- Research experience:
  The integrated application of knowledge in a discipline, understanding of education, and research skills to a well-defined educational problem derived from theory or educational practice; reported in a dissertation or articles in scientific journals. Reading and discussion of published research reports in order to enlarge the range of experience of research styles.

- Communication skills:
  The "language" of related fields and educational practice; working in teams with other researchers and practitioners. Preparing non-technical reports and other media of research dissemination. Preferably also continuous training in the language skills necessary for international work and co-operation.

Most of these requirements, in addition to course work and reading, call for practical application as a fundamental part of training. This can most easily be arranged in institutes engaged in research in close contact with educational practice. If possible, research experience over and above the subject of the student's dissertation should be given, for instance by involving him in consultation in teacher-initiated development or in the work of a research organisation. The line of demarcation between formal training for degree requirements and in-service training will, of course, be rather indefinite and this holds especially for the skill items where formal training is just an early phase in a continuous, life-long learning process.

4. COMPLEMENTARY RESEARCH TRAINING

Under this heading the working party recognises two main types of programme: further training for professional researchers and the initiation to research of other categories.

The researcher must continuously keep up to date with advances in knowledge and methods within his field of specialisation. Much of this is accomplished through reading and by applying the results in his own research work. However, in some instances, especially where advanced technical innovations are concerned, formal courses are needed. To some extent courses given within the context of regular research training can also be of use to researchers who have already taken their research degree. In some other cases the courses needed are of such a specialised nature that they can be arranged only through international co-operation (see section 7.5).

Introduction to educational research is needed for e.g.:

- persons with an advanced degree in education or pedagogy which does not include training for empirical educational research - a numerous category in some countries;

- persons with an advanced degree in another field, for instance economists, statisticians, historians, philosophers, linguists, who need an introduction to educational concepts and problems as a preparation for research in education from their own discipline's point of view;

- subject matter specialists engaged in curriculum research, who need both an understanding of the role of the curriculum in the educational process, and technical skills in, for instance, the analysis of objectives and evaluation procedures;

- technical and administrative staff working in educational research projects, who need both a general understanding of research and specialised technical skills;

- documentalists, writers and editors of non-technical versions of research reports and other people involved in the process of research dissemination;

- teachers, administrators and other categories of people working in education. The place of research in the basic training of these groups is dealt with in section 6. For people already in the profession a similar introduction to the function of educational research might be given in seminars and workshops oriented around problems from their working life.

With so many groups, most of them very small and having heterogeneous backgrounds and rather specific demands, such introductions pose difficult economic and organizational problems, at least if one thinks in terms of courses. The important thing, however, is perhaps not arranging specialized courses but observing the needs of these groups and using, with some ingenuity, facilities available as parts of systematic individual programmes. Then a partial use of the courses in the regular training programmes may be possible. Reading, research seminars, and in-service training in projects can be arranged. Even courses in other departments, universities or countries may be available to fit the requirements of some persons.

5. CAREER STRUCTURES FOR EDUCATIONAL RESEARCHERS

It has already been stated that no strict organisational boundaries should be drawn between conclusion-oriented and decision-oriented research; also that the training of educational researchers is most efficiently done in a milieu where research of both kinds is being carried out. These are arguments in favour of applied research within universities or of a close co-operation between universities and separate research institutes. In the latter case students can do the research for their dissertation in the separate institutes, and the senior researchers there who act as advisers may hold part-time posts in the university. Part-time research posts and temporary secondment are also needed as links between research and teaching, and during periods of transfer between research and other professional activities.

In both types of organization a certain balance between permanent and temporary research posts is desirable. Permanent posts are needed for establishing continuity and creating career prospects that help improve recruitment to educational research. Temporary posts are needed to guarantee a continuous flow of young researchers through the organisation. For both categories opportunities for transfer and promotion to other positions should be created.

Mobility within the research field is easiest in fairly large and diversified research organizations, where continuous training is an integral part of a researcher's professional activities. As yet educational research seldom operates under optimal conditions in this respect. Such internal mobility is not sufficient, however. After a period of active research, varying in length from individual to individual, the productivity of a researcher may decline, but his research experience can still be profitably used in teaching, administration, or research-related positions of specialised kinds. External mobility, i.e. between research and other careers, is facilitated if the basic training and the professional activities of the researcher have been broad enough to include some preparation for teaching or administration. It should also be pointed out that the qualities of initiative, method and analysis fostered by active research are valuable in many positions of responsibility outside research. In some cases a transfer from other professions to research may be desirable; but because of the rapid pace of development in the theory and methods of research this usually makes a retraining period of considerable length necessary.

The above recommendations hold for a situation where educational research already has its infrastructure in the form of institutions of various kinds that can interact in a profitable way. The working party, however, is aware that this situation does not yet exist in all CCC countries, and in some countries where an organisation was in the course of being built up there has recently been a tendency to call a halt due to scarce economic resources in that society and particularly for education. Since research contributes to a better and a more cost-effective education, a contraction of research resources is a short-sighted policy that should be discontinued as soon as possible.

As regards the type of organisational structure needed, there is often - even in countries with an otherwise well developed research structure - a lack of efficient links between research and application. One approach that seems promising is to build up regional centres of development and implementation affiliated with the research institutes at local universities and schools of education. Such centres could also take responsibility for the introduction of teachers and administrators to research, and more generally to innovation and methodological improvement (see sections 4 and 8, and the paper by Professor de Landsheere). They would be one of the most appropriate "stations" in a rotational career scheme including research, development, teaching and administration.

As much as a regional organisation is needed for improving the contact with educational field practice, an organisation at international level may be needed for facilitating co-operation between institutes in different countries and co-ordinating large scale projects as well as highly specialised training courses (cf. section 7). When discussing this prospect the working party has had in mind the simulated activities of an imaginary European Foundation for the Promotion of Educational Research and Development (EFPERD), discussed at the London colloquium for research directors (cf. Council of Europe Information Bulletin 1/72).

6. THE PLACE OF RESEARCH IN THE TRAINING FOR EDUCATIONAL PRACTICE (1)

If educational research is to make its full impact, better communications must be established between research and educational practice. One prerequisite for this is an improvement in reporting and other means of research dissemination. But even more important is to improve understanding among teachers and other educational practitioners of the function and basic principles of educational research.

The teachers' relation to educational research can take different forms and vary in depth of involvement. In his paper G. de Landsheere identifies four "levels":

1. Problem-oriented teaching adjusted to the individual student's capacities, and its corollary, problem-oriented learning, form a research-like process. The basic attitudes and methods required can be developed in a research-oriented teacher education, and transmitted through the teacher's behaviour to form an integral part of problem-oriented learning.

2. Even though the art and techniques of teaching draw on many other sources than educational research, teachers should be prepared to take advantage of research, and this makes it necessary to include among the goals of teacher education an understanding of educational research.

3. The teacher very often would be a valuable collaborator in educational research, but this requires a common language and a common frame of reference which must be built up from both sides of the partnership.

4. The teacher himself can become a researcher. Teacher education cannot include the necessary professional training but through its research-orientation it can help in recruiting researchers from this most valuable source of potential.

Professor de Landsheere's paper includes detailed objectives for induction to educational research in initial and continued teacher education. These cannot be repeated here. The working party, however, would like to stress one general point. More effective for teachers than formal courses in educational research are opportunities to take part in the planning and execution of smaller investigations into problems of relevance to the teaching situation. These research activities should be guided and followed up in seminar discussions. Such experience should not be confused with regular research training, but can have a stimulating influence on recruitment to educational research. Even more important is that it helps to create an experimental attitude in teachers in their classrooms.

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(1) For additional recommendations see the paper by G. de Landsheere

Similar recommendations hold for the basic training of administrators, planners, school psychologists and other educational practitioners. For the usefulness of educational research it is also important that opportunities are created for researchers and persons in decision-making positions to co-operate in seminars and work-shops in order for each to become aware of their different roles and mutual expectations in the process of innovation.

7. PROPOSALS FOR CO-OPERATIVE ACTION

So far the working party has made a number of general recommendations for the design of research training and the structure of research careers in member countries. To end with, a series of proposals will be made for international co-operation in this same problem area.

7.1 Exchange of information

Information on training programmes and career structures in countries with a developed organisation for educational research, which may be a useful guide in setting up new programmes and improving existing ones, should be collected and published at appropriate intervals by the relevant committees and the international organisations concerned. The existing information incorporated in national reports, guides etc., should be made available to interested countries.

7.2 Exchanges of students

Exchanges of students should be encouraged by economic and administrative support from the Council of Europe and other international organisations concerned, and by a credit or work description system which would allow work done abroad to count for a degree at the student's home university. The existing exchange schemes should be fully exploited also for the training of educational researchers, and be further developed by member governments and foundations. Informal contacts between course directors, perhaps through meetings under the CCC and similar bodies, could be the point of departure for such a system. A comprehensive catalogue of research degree programmes would be of great guidance for the students and their home universities. In a long-term perspective it might even be possible to set up a European system for the accreditation of courses.

7.3 Exchange of researchers

Senior researchers working as visiting professors in other universities for a period of time have had a stimulating influence on the research activities of the host institution. Junior researchers would gain profitable experience from working for some time in another country. Here also, informal contacts between directors could be beneficial, but economic and administrative support from the Council of Europe would considerably facilitate such an exchange. The working party recognises that the exchanges which have taken place have been mutually rewarding and should be further encouraged.

7.4 Common curriculum development

The development of syllabi, textbooks and other teaching materials for specialised courses is an expensive and time-consuming activity which often needs co-operation between specialists from different countries. The working party commends the development which have resulted from the contacts initiated by the Educational Research Committee, and welcomes those publications which have drawn on the resources of several European countries.

7.5 Common training courses

The working party welcomes the practice of inviting to national conferences and courses, researchers from abroad. A further step is to arrange courses on an international level, for instance summer courses with teachers and participants from different countries. Such courses have been arranged by international organisations, international associations, or a "consortium" of research institutes in various countries. In all these cases the Educational Research Committee and similar bodies could function as a mediator.

7.6 European scholarships and fellowships

All the measures proposed in sections 7.1 - 7.5 would be greatly facilitated by the extension of the system of European scholarships and fellowships. Scholarships are needed both for initial and further training in all the goal areas mentioned by the working party. Additional fellowships are needed for the exchange of senior researchers.

One of the roles of the Council of Europe in this respect should be to encourage member governments and foundations to contribute money, and to operate the system which includes informing candidates about available resources, securing nominations from the research community, and setting up and co-ordinating a selection procedure.

TRAINING AND CAREER STRUCTURE OF EDUCATIONAL RESEARCHERS

A GENERAL SURVEY OF THE PROBLEM AREA

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1. INTRODUCTION AND BASIC DEFINITIONS

The rapid expansion of educational research and its orientation towards problems of direct importance for educational policy have brought the questions of research personnel - their recruitment, training and careers - into the foreground among the problems that confront or ought to confront, research organisations and those bodies responsible for the supply and allocation of resources for research. In some places this expansion might have been rapid if lack of adequately trained and experienced personnel had not hampered further investment in educational research. In others restrictions imposed by lack of competent personnel do not seem to have been properly observed, with the result that the outcome of research has not reached the level expected, neither in quantity nor quality. Bad or irrelevant research is even more detrimental to the future of educational research than no research at all.

Defining educational research has proved to be a very difficult task for a number of reasons (cf. Malmquist and Grundin, 1973, section 1.3). Partly this difficulty derives from the continuous discussion whether the scientific study of education can be regarded as a unitary discipline in the academic sense. Some researchers view education as a field of application for which scientifically based knowledge must be brought together from many different disciplines, ranging from, say, physiological psychology to history, with the social and behavioural sciences occupying a major sector in between.

In contrast other researchers try to identify a narrower and methodologically more homogeneous domain for a proper discipline of education or pedagogics centering around the teaching-learning process. Such a discipline most naturally belongs in the social-behavioural sector. What is aimed at, however, is not just an application of psychology or sociology to matters of education but a science with its own central theories and concepts (cf. Sjöstrand, 1967, Kallós, 1973, Lundgren and Wallin, 1973).

Since, however, it will hardly be possible to fully integrate within such a unitary concept the contributions to education from all other disciplines along the scale from physiological psychology to history, the concept of educational research must continue to be used both in a broad and a narrow sense. This review uses the broader concept, but with some concentration on the social and behavioural sciences sector when discussing training for educational research.

The problem of definition also extends to the term research which can be used with many different meanings. A basic line of demarcation goes between different philosophies of science. The dominating tradition, at least in the English-speaking and Scandinavian countries, is an empirical-analytical approach based on positivistic philosophy. In fact it has dominated to such an extent that many researchers are not even aware of their "affiliation". In the continental countries different approaches to educational research compete (Malmquist & Grundin, 1973, Ch. 4), and phenomenology, existentialism, and Marxism are strong alternatives that have a deep influence both upon "knowledge interests" and methodology. These alternative approaches also seem to be gaining some ground in the "positivist countries", and a significative expression of this new awareness is the recent American book "Philosophical Redirection of Educational Research" (Thomas, 1972). In the section on goals of training an introduction to different philosophies of science will be stressed as an important item.

Also within the positivist camp the term research is used with different degrees of strictness - from controlled experimentation and quantitative measurement to naturalistic observations and qualitative analysis of data. This review largely remains within the positivist tradition but without any special methodological restrictions as regards "hard" or "soft" procedures. The

research ideals adhered to correspond to those of "disciplined inquiry" as defined by a committee of the US National Academy of Education (Cronbach and Suppes, 1969) and illustrated in the following quotations (pp. 15-18).

> "The report of a disciplined inquiry has a texture that displays the raw materials entering the argument and the logical processes by which they are compressed and rearranged to make the conclusion credible ...
>
> Disciplined inquiry does not necessarily follow well-established, formal procedures. Some of the most excellent inquiry is free-ranging and speculative in its initial stages ...
>
> A disciplined inquiry does have an internal consistency that requires colleagues to take the findings seriously, even when they disagree with them ...
>
> Fundamental to disciplined inquiry is its central attitude, which places a premium on objectivity and evidential test."

Defined in such a way research not only comprises empirical inquiry with quantitative techniques but also naturalistic observations, logical and philosophical analyses, and historical studies. It can take place within the conceptual and methodological framework of different academic disciplines such as psychology, sociology, economics, philosophy, and history.

The discipline-method dimensions do not, however, completely describe the diversity of educational research. Variations also exist as regards (among many other things) the aims of research. The distinction most frequently used concerning this aspect is between basic, applied and developmental research. The difficulties met in using these categories are also well-known. A more recent distinction is between "conclusion-oriented" and "decision-oriented" research (Cronbach and Suppes 1969, pp. 20-21).

> "In a decision-oriented study the investigator is asked to provide information wanted by a decision-maker: a school administrator, a governmental policy-maker, the manager of a project to develop a new biology textbook, or the like ... The conclusion-oriented study, on the other hand, takes its direction from the investigator's commitments and hunches. The decision-maker can, at most, arouse the investigator's interest in a problem ... The aim is to conceptualise and understand the chosen phenomenon."

The distinction made here is a distinction in respect of initiatives and basic commitments and not in respect of potentialities for educational improvement. Both conclusion-oriented and decision-oriented research can be of utmost importance for educational policy and practices and should be supported each in its own right, but perhaps with different methods of resource allocation.

Among the decision-oriented studies the Cronbach-Suppes report further distinguishes between (a) operational or institutional research, and (b) product or developmental research. Operational studies are done in order to provide the decision-maker with systematic information, "not to tell him what to do". Developmental research should be used not only for evaluation of final products but as a basis for decisions throughout the design and try-out sequence.

Before leaving the definition of decision-oriented research some other frequently used concepts should be brought into the context. System and program evaluation rightly belong to operational research. Curriculum research including curriculum evaluation to a large extent coincides with product or developmental research. Other terms that are akin to the decision-oriented side are "policy research", "action research", "practice-oriented research", R & D. The term research, when used without special delimitations in the following review, refers to all these kinds of decision-oriented research as well as to conclusion-oriented inquiry. What earlier was said about a "philosophical redirection" applies equally well, for instance, to educational evaluation as to basic educational theory (cf. Stake, 1974).

This excursion into problems of defining educational research was made in order to establish a background for specifying the requirements concerning research personnel. It is evident that the diversity of research calls for a diversity of personnel. Educational researchers can come from many disciplines and many applications. In addition, there is a need for specialists of various kinds at both professional and technical levels as well as for clerical and other support personnel. Although this paper will primarily deal with educational researchers some comments will be made about the specialists and their training, for instance subject matter experts in product development, design and data analysis specialists etc. As regards educational researchers, on the other hand, a limitation has to be made within the broader framework insofar as research training will be discussed primarily in a social and behavioural science perspective. The involvement in educational research of historians, philosophers etc., will be seen mainly as a problem of recruiting persons with such backgrounds for disciplined inquiry into education. This means that the educational research career is seen as having two main inputs:

(a) through research training in the social and behavioural science field, and

(b) through recruitment of trained researchers from other fields.

The paper is planned according to this division of inputs and the subsequent career. The different parts have been written more as an inventory of problems for further discussion than as a report on the author's own views, even if they inevitably have influenced the selection of items.

2. TRAINING FOR EDUCATIONAL RESEARCH

This part of the paper will begin with goals and prerequisites for training, go on to programmes, content and methods, and conclude with the organisational settings in which the training takes place. In order to avoid too much dependence on the author's own experience and biases, a search through the relevant literature was undertaken. Most of what has been found are discussions by various authors and committees, but some empirical studies of student input and research output will also be cited.

2.1 Goals

2.1.1 Graduate education in general

Explicit goal formulations for research training are rare. In addition to the difficult and forbidding task that making goals explicit seems to present generally in higher education, the sophisticated skills involved in research competence, the small number of students up till now and the highly individualised apprenticeship-type of training usually given at this level (if given at all) explain very well the lack of explicitness. But with increasing numbers and organised courses also at graduate level this lack may be detrimental to the results of training.

This does not mean that the goals have not been discussed. Some issues that are relevant for goal formulation can easily be extracted from these discussions. Since the main instrument for research training in most countries is the programme leading up to a Ph.D. or similar academic degree, it is natural to start with some issues concerning such programmes. Discussion of whether the doctoral programme is a suitable form for training for educational research will be postponed.

When discussing the purposes of graduate education in the United States, Berelson (1960) focuses on two somewhat conflicting aims: training of researchers vs. preparation of college teachers. The Ph.D. programmes had been criticised by some groups for being too specialised and also for failing to prepare adequately for the teacher role. Some graduate schools had tried to broaden the training either within disciplines or through inter-disciplinary programmes. One argument for stressing college teaching was that a majority of the doctoral candidates were supposed to choose the teaching profession (op. cit. p. 44 ff). Berelson, however, shows that the trend is changing to a majority staying in research-oriented settings. In his recommendations he maintains that training in research and scholarship should be the primary purpose of doctoral study and that training at this level must be specialised, usually within a sub-area of an established discipline. The graduate school should aim at providing the skilled specialist with a greater depth of knowledge and understanding (op. cit. p. 220 ff).

Another focal point in Berelson's discussion is the growing professionalisation at doctorate level, i.e. using Ph.D. programmes for increasing and specialising competence in professions (outside research and teaching). This means a trend toward skills and technical expertise at the expense of traditional academic values. At the same time the basic disciplines seem to strengthen their impact on programmes for professional degrees in, for instance, medicine and engineering (op. cit. p. 80 ff). Berelson is in favour of these trends (op. cit. p. 223).

A third major issue regarding graduate education is the purpose of the dissertation. Traditionally the dissertation was supposed to be "an original and significant contribution to knowledge" (op. cit. p. 173), bearing witness of the doctor's competence to do independent research. With team research, individual originality has become difficult to evaluate, and the contributions to knowledge have so often been just additions of marginal interest that the fruitfulness of the aim can be questioned. Instead the dissertation is now seen as a training instrument - a start in research and not, as so often has been the case, both the first and the last contribution to knowledge.

Even though Berelson's evaluation refers to the American system of graduate education, the main issues - specialisation, professionalisation, dissertation as a training instrument - are relevant in most countries. In small countries it is even more likely that a Ph.D. or similar degree must serve many purposes simultaneously and then the goal conflicts are present.

In Sweden the system of research training was reorganised in 1969 after having been discussed by a government committee, Forskarutredningen, that published its main report in 1966. In the old system there were two research degrees: in the arts and science faculties Filosofie Licentiat (Fil. lic.) and Filosofie Doktor (Fil. dr.). The first, ideally, took about three years from the first academic degree, the latter an additional period of three years but with very great variations. A new Fil. dr. with a four-year programme from the first degree was substituted for these two degrees. The government did not accept the committee's proposal for an intermediate degree after two years, but a two-year professional training for psychologists has been started instead of the Fil. lic. that served as a professional degree for this category. So much for the organisational background.

The committee expressed the requirements of research education in the following way (Forskarutredningen, 1966, p. 43): (1) The researcher shall receive a broad methodological training and an orientation concerning the research frontier in his discipline. (2) Through his training he shall receive knowledge and skills that enable him to write a "good" dissertation. The dissertation shall be based on independent research work and have importance for research in the discipline.

The committee, however, was aware of the conflict between the two requirements and aimed at a balance between them. The government bill (Proposition, 1969) stressed the training instrument aspect of the dissertation somewhat more than the committee had done and also the need for flexibility of programmes in order to meet the demands of professions other than research.

The Swedish reform is cited as an example of the importance of the goal issues that were highlighted by Berelson. Its implementation in Ph.D. programmes for different disciplines is an illustration of the difficulties in finding consensus in and between disciplines on questions such as specialisation, professionalisation, and independence. On the whole, however, the trends go in the same direction as Berelson's recommendations and this seems to hold also for reforms at graduate level in other countries.

Goal formulating of the kind discussed so far is not very specific and does not give much guidance concerning the details of the programmes. More specific goals usually have to be inferred from the relative weight of general vs. individual requirements, from the content of the courses and the characteristics of the dissertations. These are likely to vary between disciplines.

2.1.2. Graduate training in education

The purposes of graduate programmes have been treated so far in general terms. It is now time to see how the main issues of specialisation and professionalisation manifest themselves within training programmes for educational research. In 1964, the American association Phi Delta Kappa devoted a symposium to "the training and nurture of educational researchers" (Phi Delta Kappa, 1965). In his contribution to the symposium Krathwohl (op. cit. p. 73 ff) described current programmes for educating empirically oriented researchers and methodologists. He tried to fit them into a three-dimensional model that is reproduced in Figure 1.

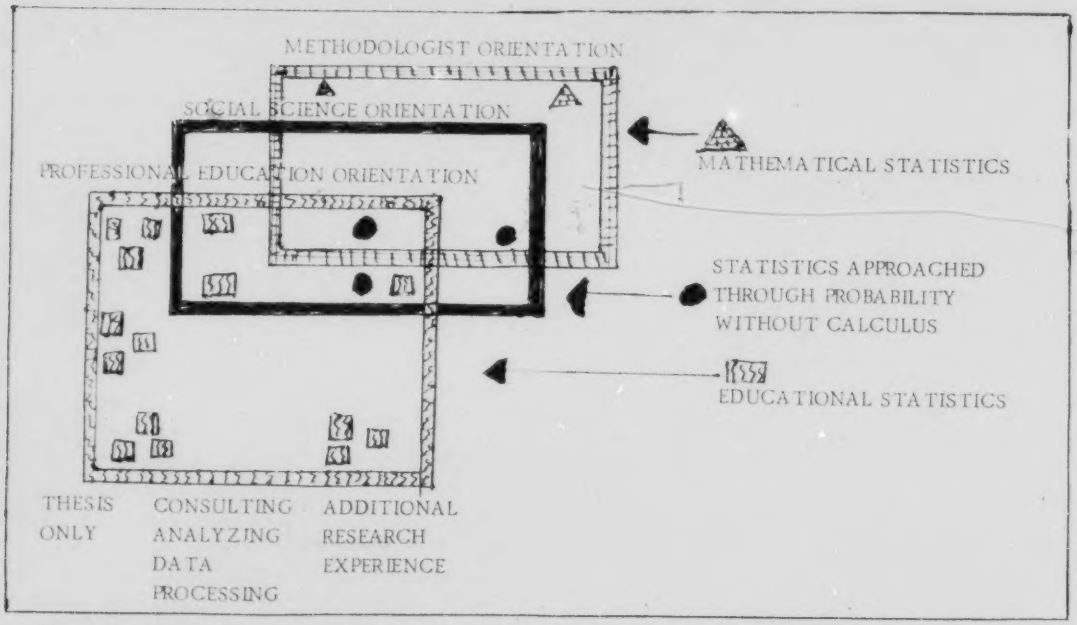

Figure 1: Orientations of training programmes for educational research.

The dimensions of this model are (1) sophistication of research methods taught, particularly in statistics and experimental design ; (2) concentration of work in education vs. social science disciplines vs. methodology ; and (3) scope of research experience obtained.

These dimensions seem to be correlated insofar as the methodologist orientation goes together with more sophistication in statistics and experimental design and at least consulting experience in addition to the thesis. The most typical example of such a programme is Stanley's Wisconsin programme (Stanley, 1967) with a strong emphasis on mathematical statistics. Researchers trained in this methodological specialisation are supposed to work as consultants to, or in teams with, persons having field experience. Through this contact they gradually become acquainted with educational practices and problems. An example of institutionalised interaction between design specialists and school personnel is given by Stanley (1964, 1966 a) describing the work of the Wisconsin Laboratory of Experimental Design. In the 1966 article he also outlines a training programme for research specialists in school systems whose main responsibilities are operational research (as defined above) and liaison between a school system and a design laboratory.

Combined efforts by methodologists and education-oriented researchers which look excellent for decision-oriented research may not be as well suited for conclusion-oriented studies (as defined above). Here a thorough grounding in a basic discipline seems indispensable, and it is unlikely that the methodologist can pick up enough of this through incidental learning from consulting contacts with discipline-oriented researchers. Nor is it likely that the profession-oriented researcher, usually starting his graduate education on the basis of teacher training, has had enough preparation in basic social sciences to undertake discipline-oriented research except in co-operation with social scientists, who in their turn need just as much the support of field experienced people for many kinds of problems.

From this might be concluded that all three orientations are needed in educational research, and students and programmes are usually not well-rounded enough to combine all aspects. This would mean that good educational research as a rule must be done by teams representing the three orientations (of which the discipline-based can be sub-divided into psychology, sociology, etc.). This, on the other hand, makes stronger demands on the supply of research personnel than most institutes can meet and, therefore, it is desirable to try to specify the requirements of a programme aimed at training a researcher who can support himself most of the time in all three respects. From Krathwohl's model it follows that the social or behavioural scientist is most likely to hold this place.

One such specification is found in the Cronbach-Suppes report (1969, p. 212 ff) where recommendations are given for a training programme which include the following:

(1) full-time study for three consecutive years, preferably at an early age ;

(2) training as part of a student group individually and collectively dedicated to research careers ;

(3) participation in research, at a steadily advancing level of responsibility, starting in the first year of graduate school if not earlier ;

(4) a thorough grounding in at least one academic discipline, together with solid training in whatever technical skills that discipline employs ; and

(5) study of the educational process and educational institutions, bringing into a single perspective the social goals of education, the bases on which policy decisions are made, the historical development of the curriculum, the nature of the learners, and other factors (op. cit. pp. 212-213).

This quotation could just as well have been inserted in the programme, content and methods part of the paper but, as said before, goals often have to be inferred from content. And what is important to notice here is the combination of (4) and (5), but without the requirement for teacher training and teaching experience that usually characterises profession-oriented programmes like the American Doctor of Education (Ed.D.) to which we are going to return below. Nor are the mathematical aspects of methodology explicitly stressed. When comparing the list with the initial discussion of definitions it is also worth noticing that no explicit reference is made to the philosophy of science and alternative epistemological and methodological approaches. As stated earlier an orientation in these aspects is a necessary part of the goals for research training.

The fifth item of the Cronbach-Suppes list sketches what they regard as the proper field of educational research. A model is developed here, i.e. from ideas put forward by Dahllöf and Wallin (1969), which can be used to indicate one possible way of obtaining the integration desired.

The "territory" (cf. Törnebohm, 1970) of educational research can be viewed from different levels.

(1) The macro level of educational systems and institutions where planning is the major operation.

(2) The intermediate level of instructional situations where teaching is the major operation.

(3) The micro level of individual students where learning is the major "operation".

The process of education now can be traced step by step through its transformations from goal-formulation at the macro level, into teaching at the intermediate level and learning at the micro level. Educational evaluation works in the opposite direction, beginning with feed-back to the learner, then to the teacher, and finally to the planner who makes the necessary adjustments before starting a new cycle.

Naturally this is a gross simplication since a great number of cycles operate simultaneously, each in a different phase, and revolving over different periods and at different levels. The model would also be too mechanistic if information from the adjacent level were the only input. Quite the contrary: each level should be thought of as having additional inputs from outside the system.

This is not the place to develop the model in further detail, but it seems proper also to indicate whence the different levels derive their primary knowledge base. At the planning level the disciplines of philosophy, history, economics, sociology and systems theory have important contributions to make. At the learning level the main scientific support comes from different branches of psychology. At the teaching level education is trying to build up its own theory and concepts, and the growing research effort at this level contains some promises of a genuine discipline of education in the narrower sense. It cannot reasonably supply basic knowledge for

the whole territory of education as surveyed here, but it can contribute ideas for a better integration of research efforts from various parts of the field.

After this sketch of the territory and its relations to the basic discipline, some attention should be given to the kinds of research skills needed; and here it is possible to draw on the work of a Task Force on Training Research and Research-related Personnel which was set up in 1969 by the American Educational Research Association (AERA). The group produced a series of technical reports, many of which are of great relevance for this paper. In this context a report by Glass and Worthen (1970) will be cited at some length. The paper tried to specify essential knowledge and skills for educational research and evaluation. The following list includes skills judged necessary for educational research, primarily of an empirical-behavioural character even though what the authors call "rational inquiry and methodological research" draw upon most of these skills.

1. Drawing implications from results of prior research
2. Formulating hypotheses or questions to be answered by the research
3. Procuring and managing resources (material and human) necessary to reach the research objective
4. Specifying data or evidence necessary for a rigorous test of the hypothesis
5. Identifying the population to which results should be generalised, and selecting a sample of the population
6. Applying experimental design and recognising and controlling threats to validity
7. Identifying the classes of variables for measurement
8. Selecting or developing techniques of measurement
9. Assessing the validity of measurement techniques
10. Utilising appropriate data-gathering methods (tests, interviews, analysis of documents, etc.)
11. Understanding the general role, types, and assumptions of statistical techniques and drawing on such knowledge in using appropriate techniques of data analysis
12. Interpreting and drawing appropriate conclusions from data analysis
13. Reporting research findings and implications

In a similar way, Glass and Worthen specify ten skills necessary for educational evaluation. Finally, they list essential knowledge about methodology common to educational research and evaluation. The methodology list is divided into five parts, namely

Statistics (10 items)
Experimental design (8 items)
Psychometrics (9 items)
Measurement (8 items)
General considerations in research and evaluation (3 items).

It is beyond the scope of the present study to cite these specifications, however interesting they are. Contrary to what might be suspected from the number of items and the authors' background and reputation, the methodology list does not put any extreme demands on the students' mathematical competence. Many of the working tools, however, come from statistics and computer science.

Compared to the other statements of goals referred to above, the Glass-Worthen lists are more specific - for example, the methodology section could be directly translated into course content - and they come closer to actual research operations than any of the others. On the other hand, they do not specify theory and concepts in any basic discipline, nor knowledge of educational processes and institutions as, for instance, the Cronbach-Suppes report demands. But it would be wrong to classify all of their categories as methodology since a great number of the operations mentioned are closely tied up with specific substantive knowledge. Rather the specification should be regarded as an operational dimension in an operations x content taxonomy and thus complementary to other approaches.

Another interesting feature of the Glass-Worthen report is that the lists of operations include logistic and administrative functions necessary for research and evaluation (no. 3 above, respectively Evaluation no. 1: Budgeting and managing human and material resources). These are skills that are usually not taught in doctoral programmes but have an important role, above all in policy-oriented research.

Before concluding the section on goals a few additional points will be made. When discussing the traditional dissertation requirements, originality was judged to be a difficult criterion for evaluation. This does not mean, however, that originality and creativity should be excluded from the goals of research training. On the contrary, one goal must be to make the training attractive for creative young people, another to arrange it in such a way that it develops creativity among all its students. These aspects will be treated in the following sections of the paper, but just one further remark on creativity is perhaps called for here. The neat and orderly sequence of operations described by Glass and Worthen gives an idealised picture of research. Great innovations often come in a much more haphazard way (cf. Engel, 1966, Polanyi, 1969), results in "normal science" also. This makes it necessary to balance emphasis on techniques and operations with freedom for deviations from accepted procedures.

Educational research as described above is a multi-disciplinary and multi-method enterprise. This might be interpreted as researchers from many disciplines working side-by-side with their own methods on educational problems. It could also mean truly inter-disciplinary research making a co-ordinated attack on educational problems from a common frame of reference, where intra-disciplinary rules and concerns are subordinated to the common goal. (1) Some educational problems can very well be tackled within a limited frame of reference, but others, and particularly those most important for macro-level policy decisions, are difficult to pursue if disciplinary rigidities are allowed to narrow the perspective. Broadening the frame of reference, however, tends to make research less neat and orderly and more open to methodological criticism. Here is another point where a proper balance must be reached in the training goals. Eide in a creative and provocative paper on educational research policy (1971), which inspired this and some other paragraphs, finds that this balance has not been achieved so far with training dominated by traditional academic values.

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(1) Piaget (1972, p. 138) also recognizes a third and higher level, "transdisciplinarity", where the disciplines are so integrated that no firm boundaries between them exist any longer. But "this is still a dream".

A basic notion in Eide's paper is "informative criticism" as contrasted with "prescriptive criticism". This means an active search for alternatives to current practices and trying to change them through information rather than prescription. Informative criticism should be exerted by many groups in the society. "But because researchers have wide discretion, research can contribute significantly to the development of an attitude of informative criticism in all centres of policy making, and at all levels of society" (op. cit., p. 10). This responsibility has implications for training goals. In addition to the critical function that is inextricably tied to disciplined inquiry the researcher also has a critical responsibility in relation to present practices in those areas of society where his research can be used.

2.1.3. Conclusions

Research training in regular academic programmes at graduate level usually has to compete with the training requirements for teachers in higher education and professional specialists. All three functions, however, are best served by a programme that promotes in skilled specialists a depth of knowledge and understanding. This usually necessitates a concentration to a sub-area of a discipline, but the sub-areas should not be too narrow and they should be defined in a flexible way leaving room for individual choices. The dissertation is to be seen more as a training device than a contribution to knowledge.

In educational research three principal orientations can be distinguished among researchers and training programmes: methodology, disciplines, and educational practice. In many contexts team work by specialists from all three orientations is indispensable. If it is attempted to combine them in one programme and one person it seems most practicable to start from a social and behavioural science basis.

The steps and techniques of regular research operations in the educational field have been specified in a way that should be helpful for constructing training. In formulating training goals it should, however, not be forgotten that creative research, inter-disciplinary projects, and the application of "informative criticism" may break some of these rules of procedure and still remain within the realm of disciplined inquiry.

2.2 Students

In the academic community, studies and research in education have a fairly low status compared both to other professional fields and most disciplines within the faculties of arts and sciences. This low reputation, which has had serious consequences for the recruitment of research students, has many roots. Teacher training has a weak connection with knowledge gained through disciplined inquiry, a fact that has been deplorably evident to any of those coming from a subject matter education in the disciplines. Many professors of education have had very little experience of research and thus have not been able to function as models for research-oriented students and to create a favourable research climate. Unlike most science and arts disciplines education is not perceived by students at secondary or undergraduate level as a possible field of research. Until recently the field has had very limited economic resources, and where these have increased rapidly the research output, due to lack of competent personnel, has not always been of the intellectual quality and practical usefulness hoped for. The reputation for having money available may attract students to training in educational research, but not the other features as described here, and it is not sure that economic incentives if not combined with a research climate attract the right ones.

This may seem harsh; unfair to many individuals and a dis-service to the field to make such conditions publicly known. But they are already well documented by many American writers (see for instance Berelson, 1960, Lazarsfeld and Sieber 1964, Phi Delta Kappa 1965, Buswell et al. 1966, Cronbach and Suppes, 1969) and there is no reason to infer that Europe is better off from the fact that very few have followed Wiseman's example (1962) and reported on the situation. Of course, there are a great many individual exceptions to this generalisation, but in the past, the field has simply not been able to recruit top-level students in a number that corresponds to its importance for the society and to the resources that the society - at least in some countries - is willing to invest in it. An improvement is badly needed.

2.2.1. Desirable characteristics

The first question then is: What kinds of students shall be recruited ? Fortunately this is not entirely a matter of opinion even if the empirical results available come from the United States and its system of training and not from European countries. In advance it should be mentioned that the main topic in this section is whether teaching experience should be a prerequisite for admission to training for research in education. In some cases a teacher's certificate and one or two years of teaching experience are a formal requirement, for instance, for becoming an "aspirant" in the Soviet Union, for the programme of Master of Education in Scotland and Doctor of Education in the United States. In other cases formal requirements may not exist; but because of the organisational setting of research training within schools of education, either the training draws rather few candidates with other backgrounds, or the teacher training requirement may simply be regarded as self-evident. Finally in some cases, especially where education is taught in universities as an arts or social science discipline, no restrictions of either type exist, and persons without teacher preparation may even be in a majority in educational research training. This holds for some of the Scandinavian countries, but the dividing line often goes not between countries but between different institutions and programmes within a country.

Buswell et al. (1966) made a series of empirical studies on training for educational research. One of them is a ten-year follow up of the research output of persons receiving a doctorate in education in 1954. In total about 800 doctors answered a questionnaire of which 300 had received a Ph.D. and 500 an Ed.D. Only 12 per cent could list two or more research publications in the ten-year period, 13 per cent one research publication, and the remaining 75 per cent none. The percentage having at least one publication was 36 for the Ph.D.s and 18 for the Ed.D.s - a difference which is quite natural in view of the different objectives of the two degrees, the first being primarily a research degree and the second a degree for professional specialisation. Both percentages, however, are low and mean that the majority of the doctors do not engage in further research. The average age on completion of the doctoral studies was 39 years, which was nearly ten years more than in many science disciplines. Younger doctors were shown to be considerably more productive during the ten years after graduation than the older ones. Late decisions to start graduate work and the number of years of teaching experience were negatively related to productivity but these factors cannot be separated from age in the reported data. Having an undergraduate major in psychology was a positive indication for future research productivity, likewise to have taken the bachelor's degree in an institution granting doctor's degrees in education. On the other hand, the number of courses in education at undergraduate level correlated negatively with research output which most likely had to do with the practical emphasis of these courses as being requirements for teaching certificates.

The second major study of educational research productivity was carried out by Sieber and Lazarsfeld (1966) as a continuation of a more exploratory study a couple of years earlier (Lazarsfeld and Sieber, 1964). Both studies mainly dealt with organisational variables. The unit of observation was the institution, not the individual. During a three-year period only

6 per cent of the doctors from graduate schools of education were estimated to have entered research positions directly upon graduation. This was taken as a criterion of the programme's productivity for research and was analysed in relation to recruitment policies, research climates and training provisions. The proportion of researchers was higher when the graduate school was more selective, when teaching certificates or teaching experience were not required at entry, and when the proportion of doctoral candidates working for a Ph.D. (instead of Ed.D.) was high. Selectivity of the student body, however, was chiefly operative when the school had a favourable research climate and when apprenticeships were provided on projects (op. cit. p. 338).

The low research productivity of existing doctoral programmes and the lack of qualified research personnel in spite of great numbers of doctors led to the establishment, under United States Office of Education, of a Title IV programme for graduate research training. The training takes place at selected graduate institutions. These receive extra funds for the training and the graduate students get stipends from Title IV. In an AERA Task Force on Training report (Hopkins, Worthen and Soptick, 1970) the characteristics of 1969-70 Title IV trainees are described. From Fleury and Cappelluzzo (1969) (not seen by the present author) the report cites five important recruitment variables: (1) age, (2) talent, (3) previous teaching experience, (4) academic background, and (5) grade point average. Data were collected on these. The 800 trainees in 1969-70 could be expected to graduate at an average age of 31 which compares well with the recommendations of Buswell et al. (1966). On standardised aptitude tests the trainees had average scores comparable to the highest scoring disciplines and professional schools and much higher than doctoral candidates in education in general. The trainees began their graduate studies shortly after their first degree which means that they usually had not had much time for teaching experience. The proportion recruited outside education was somewhat higher than in earlier studies and so was the proportion coming from positions which involved some research activity.

The Title IV trainees here described are a select group of students getting stipends and as such not directly comparable to earlier or coeval cohorts of doctoral candidates in education. But their composition shows that it is possible in education to recruit research students with characteristics quite comparable to those in the most highly regarded academic fields. And their number is quite impressive - nearly 800 - so it is not just a small elite.

The next question to ask is naturally: What did they do to bring about such an improvement in student recruitment? But firstly the empirical results will be discussed and related to other information about desirable student characteristics.

The criteria of research productivity of the Buswell et al. and Sieber-Lazarsfeld studies could be questioned. The number of publications and the proportion of doctors entering research positions directly upon graduation are very crude measures of dedication to research. The proportions in the positive categories are small, especially in the Sieber-Lazarsfeld study. But where comparisons can be made the results are quite coincident in spite of clearly distinct criteria and this lends more credibility to the conclusions drawn than two studies with identical criteria would have done. The main results are also supported by informal experiences reported by other authors and groups.

High academic talent is stressed by most of those who have written on student requirements - perhaps more so by Stanley (1962, 1966, 1967) than by anyone else. Usually talent is operationally defined by tests such as Miller Analogies Test and Graduate Records Examinations, in which case there may be a risk of viewing talent too narrowly and too much from the convergent thinking perspective (cf. Guilford, 1967). If selection procedures are used in connection with admission to graduate studies, assessments of creative abilities also should be used to balance the more conventional tests in the information processing and problem solving area.

Another measure of academic promise is achievement at earlier levels. In discussing academic grades as predictors of performance in research training an ad hoc committee of the American Psychological Association (APA, 1959, pp. 174-175) warns that:

> "A high grade record may be evidence of high intelligence, but it may also be evidence of a tendency to social conformity which may be undesirable for research. Indeed, many types of deviant behaviour may be assets in a research man. For example, rejection of authority, perseveration on "pet" ideas, unwillingness to commit energy in subject areas of low interest, and general independence of thinking are all probably desirable characteristics for research. These same characteristics, however, may result in an appearance of undesirable deviation from the norm - for example, in a spotty grade record."

Buswell et al. recommend undergraduate preparation in liberal arts rather than teaching and this view is not only taken by people from the disciplines but also by representatives for the professional education side (cf. Cronbach and Suppes 1969, p. 22) - probably not so often by teachers anyhow! A Swedish example of a similar concern may be cited. Following the proposal of a government committee Pedagogikutredningen (1970), an organisational integration of the departments of education (as distinguished from teaching methods departments) in schools of education and universities has been decided by the parliament. One of the main reasons for this integration, expressly stated both by the committee and in the government bill (Proposition, 1971), was the need to facilitate the recruitment of university students, especially in behavioural and social sciences, to research in education in teacher-training contexts.

The problem is treated also in the survey of educational research in Europe by Malmquist and Grundin (1973, section 13.2) who on the basis of their empirical data conclude:

> "On the whole, the questionnaire replies regarding the academic grounding of ER (educational research) trainees, which have been reviewed here, indicate that a majority of those engaged in ER as researchers or research directors want their research field to remain within the realm of psychological or behavioural science - perhaps broadened somewhat on the sociological side. The fairly unanimous emphasis on academic grounding in statistics seems to imply that ER is seen as a mainly empirical or experimental field of science, in which one should aim at the collection and analysis of different kinds of objective data and at the formulation of 'laws' of a probabilistic nature on the basis of such analysis."

With the rising interest in curriculum research and development, however, other disciplines also have come into focus as suitable preparation for undergraduates, for instance linguistics, mathematics, and the natural sciences, not necessarily combined with teacher training. Educational technology in some of its applications calls for a thorough background in engineering or computer science. It is important that the graduate programmes for educational research are made flexible enough to recruit from these new backgrounds also.

The apparent lack of appreciation for teaching as preparation for educational research, which has been a recurring theme in this section, must not be interpreted in a superficial way as teaching per se making a person less apt for educational research. On the contrary, the experience as such is most likely to be of value but this has to be weighed against a number of other consequences. Recruitment from teaching should be stimulated. But those who are likely to come are just too few and too specifically trained to form the main manpower source for large scale educational research.

For those who have taken teacher training as a self-evident requirement some of the empirical results have come as a shock. The causation behind them is complicated, however. Tentatively the following explanations are suggested here.

(1) Teacher training, especially for classroom teachers, tends to attract persons more characterised by social-personal than intellectual-scientific interests.

(2) Teaching at primary and secondary levels does not receive the status and rewards that enable it to compete successfully for the intellectually most qualified students. This, however, is not likely to hold for all countries and all social groups.

(3) As said before, teacher training usually has little contact with research either in the form of research-based procedures or personal models for doing research.

(4) Teaching experience between undergraduate and graduate studies tends to delay entry into graduate school until a period in a person's life when many occupational and private responsibilities compete for time and interest; sometimes even until an age when flexibility has decreased and time begins to become too short for a significant amount of research production.

(5) Being trained in a group where the majority have other professional aspirations than research also makes involvement in research less probable.

(6) Teacher education has its special objectives and cannot afford to put in enough time for basic social and behavioural sciences to be the main channel of recruitment to educational research training.

Sieber and Lazarsfeld (1966, p. 349) recommend that "the requirement of professional experience or of the teaching certificate for admission to doctoral candidacy in education should be eliminated for students who wish to specialise in empirical research". Instead, field observations in school systems should be organised as a part of the graduate programme. The above-listed "tentative explanations" also seem to call for some changes in teacher-training, for instance as regards item (3), that would make teachers better prepared for entering research training.

For a person not already involved in research it is difficult to know what research is like, and whether one's own interests and capabilities meet the demands made by graduate studies and dissertation work. Therefore it is desirable to let the prospective research students have some experience of research already at undergraduate level. This may function both as a recruitment incentive and as an instrument for self-selection. In addition, undergraduate research performances would be one of the best selection instruments for admission to graduate school. These aspects were stressed particularly by the APA ad hoc committee (1959, p. 175). The requirement of a thesis at undergraduate level is obligatory in the Swedish system. Most people in educational research find it so indispensable that they may not even have thought of another course of action.

2.2.2 Active recruitment policies

This section can be brief as some procedures have already been described and others follow rather directly as implications from desirable student characteristics. From what has been said above it also follows that the main target for active recruitment operations are young talented students in the social and behavioural sciences, although efforts should also be aimed at recruiting from among prospective teachers and from others working in educational contexts.

The recruitment operations fall into two main classes (1) creating interest, and (2) supplying support. It seems important not to pass over the first of these two steps or try to attract people into the field primarily with economic incentives. Interest should preferably be developed into a genuine interest for research in educational processes and institutions and not for research in general, since the opportunities to emigrate to other fields of application after training are manifold.

In creating interest, the first condition seems to be to establish contact with young students and make the field of educational research visible to them. These opportunities vary to a great extent with institutional factors. Where education is studied at undergraduate level only in schools of education and teacher training colleges, reaching liberal arts students is a difficult task since it is highly dependent on the interest for educational matters of teachers and researchers in other disciplines - psychology, sociology, etc. In this case, it seems necessary to establish organised relations between education faculties and undergraduate departments in social sciences. Sieber and Lazarsfeld (1966) found that the research quality of the schools of education was higher when arts and science professors took part in the recruitment of faculty members in education. Maybe this organised co-operation could also have effects the other way around in making it more likely that students in arts and science faculties through their professors become interested in educational problems. This, however, is not a matter that could be left to contingencies but should be given constructive thought by those interested in promoting educational research.

The situation is easier where education is studied in a disciplinary framework as a subject parallel to other behavioural and social sciences, both at undergraduate and graduate level. There it is possible to reach the student from the first day of his university life and have him spend most of his university education in an education department. This is the case in Sweden where education (or pedagogics) can be studied for from one up to four of the six semesters of undergraduate study and four years at the graduate level. This gives educational research a maximum of chances to become known to the students. But still the recruitment problem remains, since choosing education as a major subject at undergraduate level without acquiring a teacher competence (except possibly in psychology and education) calls for other professional opportunities. One such opportunity in Sweden is to attain competence as a professional psychologist. All prospective psychologists take at least one semester course in education together with courses in psychology and sociology. If they become interested in educational psychology, they have had the option to take a major part of their undergraduate and all of their graduate training in the education department. Many of those who are now active in educational research have started their specialisation with the intention to qualify as professional psychologists. This has been of major importance for the empirical and policy-oriented trend in Swedish educational research. With growing professionalisation of the training of psychologists, however, the departmental specialisation is going to decrease and with that to some extent the chances of keeping prospective psychologists in educational research training. Therefore, attempts are being made to develop training programmes for education specialists of different kinds, for instance educational technologists, that can be chosen with a fair promise of professional opportunities and help to serve as a basis for recruitment to doctoral studies. It will take some time, however, before such new specialities get the same status and attractiveness as professional psychology.

Leaving aside the institutional prerequisites for attracting students in their early career a general remark should be made about channelling student interest. If it can engage the students in research on their own problems and perceptions as partners in an educational process, instead of in dull course-work, education should have a unique chance to lay a solid foundation for motivation and interest which could be extended to other parts of the field. Is it presumptuous to suspect that activity-oriented pedagogy is now lectured more than practised in education departments ?

Supplying support for research training is done through various methods and programmes. Usually there is a general system of stipends for graduate study. In the Soviet Union, for instance, those working for the first research degree (the candidate degree) are supported through a special aspirant system. In United Kingdom the Social Science Research Council finances research stipends. Assistantships in instruction or research, with time put aside for own training, also form a channel of support that often exists side by side with stipends. Then there are special programmes for supporting graduate study in education of which the Title IV programme of the US Office of Education referred to is likely to be the most important. In France certain students preparing their "Maîtrise" are paid under a contract concluded with l'Institut National de Recherche et de Documentation pédagogiques. In Sweden, the National Board of Education practises a system whereby a number of graduate students are financed while they do research on problems having connection with contracted research projects. In addition, many graduate students have regular appointments within projects and are allowed to use work in the mainstream of the projects as dissertations. In their evaluations of the Swedish programme Passow (1968), Passow and Postlethwaite (1970), and Atkin and Johnson (1971) stress the importance of systematic training activities as part of such arrangements. At somewhat higher levels of competence the Swedish Social Science Research Council finances a few research posts for doctoral study. Sieber and Lazarsfeld (1966) recommend that the US Office of Education automatically should offer contingency funds to every project that assumes the obligation to train a graduate student in conjunction with the project beyond the project's minimal needs for routine assistance.

All these different channels of support should be used to facilitate recruitment to educational research training. It is important that both stipends and assistantships be combined with individualised training programmes under the supervision of competent researchers, not necessarily one of the few professors but rather full-time researchers in a suitable area of specialisation. Assistants employed for instruction or in research projects should not be overburdened with routine tasks. Instead, they should as much as possible be used for tasks that are in line with their own specialisation, and which can also be credited as degree requirements.

The general conclusion of this section is: educational research needs young, talented people with a good background in disciplines, a realistic perception of what research is and a solid interest in educational matters. This may be a conclusion of such general quality that it is hard to see who would not endorse it for his own field of application. We shall therefore not get such researchers without competition.

2.3 Programmes, contents, and methods

Some of the topics that could have belonged to this section have already been treated under "Goals" since these often had to be inferred from programme construction and content. Some items dealing with the teaching-learning situation have been introduced in the section on students. What remains to be done here is to illustrate some programme characteristics and actual or controversial questions of content. In addition, some methods and procedures

with particular relevance for research training will be discussed. In contrast to the section on students, little empirical data on the efficiency of various procedures has been found. This could be looked upon as just another example of the preoccupation in educational research with input and output variables leaving the teaching-learning process to take place without comparable guidance by research.

2.3.1. Degree programmes

In most countries the highest university degree is the doctorate which as a rule includes research. The programmes for this degree vary considerably in length and organisation. In many countries there exists an intermediate degree requiring from one to three years of full-time study after the first university degree. Examples of such intermediate degrees are Masters in English-speaking countries, "Maîtrise" in France, "Candidate" in the Soviet Union, and "Licentiate" in some Scandinavian countries. Where this degree requires several years of study, for instance in the Soviet Union (3 years), course-work is often concentrated at this level (in addition to a short thesis), and the only further requirement for the doctorate is research reported in a dissertation. The "Candidate"'s is also regarded as the normal research degree and a rather small proportion of the candidates continue to the doctor's degree. Shorter programmes are, of course, less prestigious and particularly so when the intermediate degree gets a reputation of being used as a "consolation prize" for interrupted doctoral studies. In the American system of graduate education the Master's degree exists but seems to have no independent function in a research career, and most researchers take a four-year programme for the doctor's degree.

Ideally research training covers the three to five years that follow the successful completion of a first degree course, but since a great proportion of the doctoral candidates do not start directly after their first degree and often teach or do professional work during their studies the time lapse between the degrees tends to become twice as long as the ideal or even more (Berelson, 1960, Forskarutredningen, 1966). Attempts have been made to reduce this time and to produce doctors at an earlier age. This is important not least for their future research productivity. Five main remedies have been tried: organising graduate studies in courses, providing more research supervision, cutting down the size of dissertations, simplifying the procedures of publication, and providing economic support in order to get more full-time graduate students. The Swedish reform will be used to illustrate how these measures can be employed.

As mentioned in 2.1.1. the two-level system of research degrees in Sweden with ideal time 3+3 years was changed in 1969 to a one-level programme for a doctorate in four years of full-time study from the first degree. The programme contains both course and dissertation work. The proportions, however, may vary between disciplines. In education and psychology, most universities have allocated half of the available time to course work, half to the dissertation. Within course work the proportion between common and specific parts also varies between disciplines and universities, but as a rule there are at least a number of general methods courses that must be taken by all candidates.

Providing more research guidance means increasing the number of professors (all levels), or cutting down the number of students, or both. The admission to the earlier system of individual studies was free, at least in principle, and the students got the guidance their professors had time to give. Now the target is a maximum of about six doctoral candidates working on dissertations per research supervisor. But in the behavioural sciences it will, even with high selectivity at admission, take time to come down to this figure, since the students in the old system are still abundant and rightly demand guidance. In addition to permanent members of staff, whose numbers have not increased as rapidly as was hoped, researchers on projects and in separate institutes are expected to function as research supervisors. Measures are being taken to institutionalise such contacts.

General recommendations to professors and doctoral candidates concerning a reduction in the amount of work submitted for dissertations have been reinforced by cutting down the number of pages for which the candidate gets printing support. Besides printed monographs, reprints of research papers published in journals and mimeographed reports can be used for dissertation purposes. The reprint form has already been used for a number of years and seems to be the most frequent form in natural sciences, medicine and technology. Its use in psychology is rapidly increasing. The grading of dissertations has been discontinued. Another means of reducing the work on dissertations might be to make the public discussion of the dissertation less demanding and formal, but not much has been achieved as yet in this direction.

Research support is given through stipends, which still are much too scarce, and through assistantships in departments. An assistant is supposed to need one extra year for his degree but because of the load of his other tasks this is generally considered to be unrealistic in comparison with the full-time students.

In the United States there are two doctoral degrees in education, Ph.D. and Ed.D. Ph.D. is primarily a research degree, Ed.D. more a degree for professional specialisation with lower dissertation requirements. In institutions where both degrees are given side by side the two programmes do not, however, seem to be sufficiently differentiated, and according to Sieber and Lazarsfeld (1966, p. 287) the less research-oriented degree tends to influence the Ph.D. norms in the direction of lower research quality than in institutions that only grant Ph.D.'s.

The Swedish government committee on educational research (Pedagogikutredningen, 1970) that proposed an integration between the departments of education in universities and schools of education also tried to construct an alternative type of doctor's degree for subject-matter oriented educational research. The study programmes for this and the existing behavioural-science oriented degree in education are outlined in Table 1. Both degrees will be granted by the social science faculties of the universities with the integrated education departments responsible for the programmes - as regards the new degree, in co-operation with the departments in the subject-matter field at the university and the school of education.

The programmes are clearly differentiated both in respect of prospective students, programme content and competencies obtained. The subject-matter oriented degree is supposed to be useful both for subject-matter teachers at upper secondary level, methods teachers in schools of education, and researchers in subject-matter oriented projects. Whether it is also suitable as a training background for future professors of education will depend on the research productivity of the holders of the new degree, which will be tried out with a few major school subjects. As a member of the committee responsible for the proposal, the author is very anxious not to have contributed to importing the Ph.D. - Ed.D. dilemma into Sweden.

The subject-matter oriented degree is to some extent based on interdisciplinary principles with research supervision given both from the subject-matter field and from education. In France (Léon, 1971-72) the educational sciences are taught in the pluridisciplinary contexts of the UERs (Unités d'Enseignement et de Recherche).

Table 1: Swedish doctoral degrees in education

Behavioural-science orientation	Subject-matter orientation
3 years of undergraduate study at the university with • 60 credit points+ in education (major discipline) (includes 10 points for own research) • 60 in other discipline(s) usually including sociology and/or psychology	3 years of undergraduate study at the university with • 60 credit points in one discipline (major) corresponding to a school subject (includes 10 points for own research) • 60 in other discipline(s) also corresponding to school subject(s)
	1 year in a school of education with courses in education, teaching methods, and teaching practice. Together with a summer course the education course is equivalent to 20 credit points in education
	2 years of teaching experience
4 years of graduate study with • 30 credit points in methods of educational research • 50 in other education courses • 2 years of dissertation work in any field of education	4 years of graduate study with • 30 credit points in major subject-matter discipline • 20-25 in methods of educational research • 25-30 in other education courses selected for relevance to research on subject-matter teaching • 2 years of dissertation work in curriculum, teaching methods or other area related to subject-matter teaching
In total:	In total:
Education as a discipline 3.1/2 years Other disciplines 1.1/2 years Research 2 years	Education as a discipline 1.3/4 years Major subject-matter discipline 2.1/4 years Other subject-matter disciplines 1.1/2 years Teaching courses 3/4 year Teaching experience 2 years Research 2 years

+ One credit point roughly corresponds to one week of course work (instruction, exercises, and reading).

The intermediate degrees were mentioned initially. In many countries they serve an important function in research training as an alternative to the doctorate even though this in general is a more desirable level of competence. In many professional fields, however, a two-year programme after the first degree would be even more appropriate than doctoral studies. An example of a two-year professional degree is the recently established Swedish diploma for professional psychologists (Psykologexamen) which, when starting, became so attractive that it almost posed a threat to the recruitment of doctoral candidates in psychology and education. Another example of a specialised intermediate degree is a proposal by Stanley (1966) for a 15 month (two summers and one academic year) programme for research specialists in school systems which could lead to a master's degree in educational research. The target group here is teachers who are interested in being promoted to positions as directors of research in local school systems. One of their future functions would be liaison with research institutes.

As mentioned in the goal section, the regular university programmes in education have been criticised for not having adapted themselves to the needs of large scale research efforts, particularly of an inter-disciplinary character. It is maintained that admission and degree requirements tend to be too rigid and too much influenced by intra-disciplinary value systems. Minor problems with high security are preferred to those that are socially important but involve a high risk. The training takes place in isolation from other disciplines and the field of application.

There is certainly much truth in this criticism but it is not possible to evaluate it properly here without more detailed specification and concrete examples. The stress on regular university programmes in this paper stems from two convictions. One is that educational research is such a difficult and expensive enterprise that it must be based on a thorough grounding in basic disciplines and methodology, which cannot be achieved just through a few research courses or through apprenticeship without the guidance of a basic training programme. The other conviction is that universities in general are flexible organisations - otherwise they would not still be here - with great potentialities for change in contents and methods, even if their freedom and flexibility now and then seem used for rigid decisions. This risk follows from the autonomy they have been granted and which is good for other purposes. According to these convictions it is better to adjust the regular programmes to forthcoming needs than to set up basic training programmes outside the degree system that is common to most disciplines and professional fields. Not least the recruitment problems call for such a reformative strategy.

2.3.2. Special programmes

Basic research training accomplished by degree programmes is a long-term proposition. There are, however, a number of short-term needs as well as needs for updating of knowledge and skills among research personnel that are best served by special programmes. A few distinctions will be made and examples given in order to illustrate such programmes, beginning with those that are aimed at continuing education for people already in the field.

The AERA Task Force on research training identified four objectives for a future in-service training programme (Sanders, Byers and Hanna, 1970, p.1):

(1) upgrade the skills of researchers who are now poorly trained;
(2) maintain the high level of competence of researchers now entering the field;
(3) teach new skills made necessary by innovations in educational techniques and products; and
(4) broaden the base of personnel engaged in activities calling for the application of educational research skills.

The group also mentioned several "vehicles" for an expanding training programme (op. cit. pp. 2-3):

(1) Pre-session courses, of the sort which have been succesfully conducted by AERA, in a still greater variety of substantive areas;

(2) Courses of longer duration, application to techniques and skills which require longer study;

(3) Summer institutes, conducted by outstanding scholars with particular areas of expertness;

(4) Conferences which would emphasise the generation and organisation of new knowledge;

(5) Workshops for the teachers of educational researchers, emphasising methods of teaching specific techniques or methods;

(6) Development of instructional materials and products for distribution to AERA members.

Some examples of such training activities will be given in the next few paragraphs.

In connection with the 1974 AERA meeting four presession courses are offered:

New models and methods in educational evaluation
Criterion-referenced measurement
Frontiers of research on instruction
Applied linear models in educational research.

During the academic year 1973-74 AERA also arranges three research training courses at institutes:

Criterion-referenced measurement and instructional improvement
Analysis and interpretation of experimental designs with unequal cell frequencies
Sampling design and the statistics of sampling for educational researchers.

The majority of these topics deal with methodolgical questions. This is true also of most items in the AERA Training Tape Series.

In 1968 a European Seminar on Learning and the Educational Process (SOLEP) was arranged in Sweden. Similar summer seminars have taken place at Stanford in 1964 and 1965 and in Munich 1971. A French-speaking seminar was held 1970 in Pont-à-Mousson (de Landsheere, 1970). The four-week SOLEP seminar had about 25 European and 10 American participants, most with a doctorate or other completed basic research training (Carroll, 1968). The seminar worked in six main areas: methodology, curriculum research, teacher behaviour, cognitive development, motivation, and second language learning. Staff members worked as instructors in these areas and, in addition, consultants gave a number of seminars, but most of the time was spent in informal group activities with somewhat flexible group membership. The final report gives a vivid picture of all the steps in the arrangement of such a conference - planning, securing funds, selection of staff and participants, housing and equipment, contents, and evaluation. Besides methodology SOLEP covered a rather broad range of substantive areas.

In the electronic data processing field special seminars have been arranged for behavioural scientists both by computer companies and by international organisations. At one such Unesco seminar held in Norway 1970, data banks were used for programming and processing exercises.

The Nordic Commission for Cultural Co-operation supports a series of conferences in educational research in specialised fields with participation from the member countries. The topics taken up so far are: media and instructional planning, the school programme for 16-19 year-olds, and pre-school education.

The research councils in the Scandinavian countries support seminars on research methods in education. So far the following themes have been taken up: general methodology, methods of evaluation, strategies for research and evaluation in social education, and epistemological problems in educational research.

Special programmes can also serve to introduce educational research to teachers, subject matter experts, administrators, and similar groups who are going to work in research and development projects or who are responsible for the application of research results in their professional functions. A foundation for this should be laid already in basic teacher training and in the specialised professional courses for administrators, guidance personnel, etc. But special conferences and seminars are also needed. There must be numerous examples of this. One is the IEA Seminar in Curriculum Development and Innovation held in Sweden over a period of six weeks of the summer 1971. Educational researchers functioned as instructors or consultants in curriculum theory, evaluation methods, individual and social change, and educational technology parallel to seminars and exercises in curriculum construction with the participants grouped according to subject-matter areas. Here the orientation in educational research was given in close connection with a specialised professional preparation. In other cases, the introduction is given in more general contexts, usually in conferences of short duration.

Another target group for special programmes are researchers with their basic training in other disciplines, for instance sociology, economics, history, philosophy, who like to engage in educational research. Some remarks about this group will be made in part 3. Also technical and clerical personnel working in institutes and on educational research projects need both specialised courses and a general introduction to the aims and principles of educational research.

Finally, some of the activities initiated by the Council of Europe Committee on Educational Research can also be regarded as part of a continuing education programme.

(1) Colloquies of directors of educational research organisations held in London 1971 and Paris 1973.

(2) Educational Research Symposia for researchers and practitioners in specialised fields. The following symposia have been arranged or will be held in the near future:
Teaching of reading (Switzerland, 1971)
Pre-school education (Finland, 1971)
Education of the 16-19 age group (France, 1972)
Teacher education (United Kingdom, 1973)
Compensatory education for the socially and culturally disadvantaged (Belgium, 1973)
Evaluation of school reform pilot projects (Federal Republic of Germany, 1974)
Innovation and change in higher education (Sweden, 1975)

(3) An exchange scheme which has been planned but not yet put into operation, is an activity of a kind that has not been mentioned before in the paper. Researchers visiting institutes in other countries and taking part in their activities is an important device for continuing education but has usually been organised on a personal basis. An institutionalised system for such exchanges would be most welcome. Resources should be supplied not only for the support of the visitor but also for research guidance.

2.3.3. Contents

In discussing the Glass-Worthen specification (1970) of research and development operations the idea of a contents x operations matrix was put forward in order to bring the items into a taxonomic model that could also comprise more subject-matter oriented goal specifications. The contents dimension so far has only been touched on in examples of programme contents. This section will continue the exemplification and a general discussion of the contents but leave the more specific recommendations to the conclusions of the working-party which used this review as background material.

In the plan for the behavioural-science oriented doctorate in education at Göteborg University the following distribution of the 80 credit points for course-work has been made (for the overall plan see 2.3.1).

General methodology		30
Theory of science, research design and research techniques	10	
Construction of research instruments	10	
Statistics	10	
Theory and specialised methods in areas selected from:		30
Learning and cognition	10	
Development and socialisation	10	
Individual differences	5	
Social relations	5	
Education and society	10	
Analysis and evaluation of educational systems	5	
Instructional processes	10	
Curriculum development	5	
Optional specialisations		20

In addition to further courses, smaller investigations, consultation in teacher-led projects, and supervision of undergraduate research can also be credited.

In examining this specification, one should bear in mind that the students have at least three semesters of education (60 points) at undergraduate level behind them. During this time they have been introduced to all the substantive areas mentioned and some general methodology. Four of the eight substantive areas are mainly psychological, the remainder deal with macro- and micro-level perspectives of the educational process and institutions. Here also historical, philosophical, and economic aspects have their place. The optional part of the programme may seem small, but it should be remembered that the dissertation work which is truly specialised takes up as much time as all the course work together.

Plans for special programmes are likely to give a picture of what parts of the research training have been weak in the past and where new developments, too difficult to attain just by reading, have taken place. Both reasons seem to hold for the abundance of methodology items in the plans. Experimental design, analysis of variance, multivariate analysis, psychometrics and scaling, and computer usage are such recurrent topics of specialised courses. These methods are difficult to learn for most people in the field because of lack of mathematical preparation. Paradoxically they are comparatively easy to teach, at least to those having a reasonable background, because the materials are well organised conceptually and lend themselves readily to exercises.

Quantitative methodology also dominates in the answers that Malmquist and Grundin (1973, section 13.4) received when asking their sample of researchers in what fields they personally had felt a need for further training. The following areas were mentioned most frequently.

	No. of mentions
Statistics	37
Psychology and psychophysiology	13
Research methods, experimental design	11
Mathematics	10
Computer science	9
Systems theory / analysis	7
Information theory, cybernetics	5

The question is, however: is quantitative methodology the only aspect where training given and research produced are defective? Of course not. One could take the Glass-Worthen list of skills necessary for educational research and almost item for item point out skills that are not usually trained in a systematic way and which are learnt at best incidentally in dissertation research. On the other hand, many of these skills cannot be successfully taught by the lecture method in courses but must be practised, ideally in a research group working on a large project under the guidance of an experienced researcher.

Still not everything is made sufficiently explicit in the Glass-Worthen lists. The methodology section should preferably include the analysis of content and style of documents, interviews and observation data, psycholinguistic methods and similar techniques of treating less "hard" data. This can be taught in courses. Another topic, which is represented in the Glass-Worthen list but not often in training, is the planning, management, and logistics functions of research projects. Techniques and materials here could be imported from industrial and business administration courses.

Finally in this section, mention will be made of contents and techniques stimulating the production of ideas and hypotheses even if these may be the most difficult things to specify and to do anything about in training. A course in research creativity can be based on reports on the process of discovery in various fields: to mention just one, Watson's book The Double Helix (1968). Polanyi's essays (1969) on tacit inference referred to earlier would be another stimulating source. In the Phi Delta Kappa symposium (1965) the chapters by Bereiter and Mooney present interesting views on the preconditions of scientific discovery that also could be of guidance in this context. One source of ideas and hypotheses that should not be forgotten is naturalistic observations of the educational process (cf. Jackson, 1968) but these belong more to the next section on teaching methods.

2.3.4. Methods and institutional arrangements

The trend in the direction of more organised course work at graduate level should not mean substituting conventional lecturing for the independent study that has predominated. It should mean that the expectations put on the candidates become more clearly defined than earlier and their studies organised in a way that they can complete their degree requirements within the time limits set. The methods of instruction, on the other hand, must vary with the goals and contents. In some more technical parts, as mentioned earlier, lecturing in combination with exercises would be well adapted to the needs of the participants. In others, probably the majority, independent reading followed by seminar or small group discussions would be more appropriate.

The examination procedures, too, should be adjusted to the level of the candidates. Where possible, individual or group reports, based on accessible literature should be substituted for conventional questioning on memorised materials. These reports could also be used as exercises in concise writing which is a skill that seems to be lacking even among high level students in many countries. The checking of composition and style required cannot always be performed by the regular teachers and supervisors. Berelson (1960, pp. 247-248) mentions a scheme where special "editors" review the writings of the students and have them revise and rewrite until their style has improved. In addition systematic training should be given in methods of oral presentation.

The main instrument for research training is active participation in research, i.e. not just doing what the supervisor tells you to do but being able to influence all steps in the research sequence. Krathwohl (1965, p. 84 ff) classifies doctoral programmes according to the extent of participation in research: from thesis work only, via consulting, analysing and data processing, to research experience in addition to the dissertation. Cronbach and Suppes (1969, p. 212 ff) stress the importance of doing research from the first year of graduate school if not earlier. A Canadian researcher, R. Edwards (1968) presents interesting views on research training where he stresses the step-wise establishment of "research behaviour" that is likely to last even after graduate school. Besides research itself, an efficient learning experience is the supervision of undergraduate research. This might be given credit points counting for the doctor's degree and be substituted for course requirements.

Even though the dissertation may now be regarded more than earlier as a training instrument, it still keeps its place as the central and most exacting requirement for a research degree. In a series of studies of "critical moments in research work" Nordbeck and his co-workers (cf. e.g. Maini and Nordbeck, 1973) have pointed to the critical importance of the initial phase of research training when the dissertation problem is selected. The choice of this problem very often determines, in a positive or negative way, the future direction of a whole research career. Supervisors and research candidates are advised to allocate more time and attention to this phase of the research process, and systematic training in finding and formulating problems should be given not only in graduate education but also at the earlier stage of undergraduate preparation. Also in the evaluation of the dissertation, finding and formulating important research problems should count for more than is usually the case at present.

Research supervision involves a delicate balance between support from the side of the supervisor and freedom on the side of the research candidate. The optimal relation varies from case to case but in general a non-authoritarian and non-patriarchal relation is preferable where the candidate is treated as a fellow-researcher and not as a pupil. Sometimes emotional support can be as important as intellectual. Nordbeck (1973) also proposes a special counselling function in relation to candidates in trouble which might be better fulfilled by another person than the supervisor.

One of the most important influences in research training is to have the candidates work in a research-oriented setting - that is in an institution where good research is done and a favourable research climate created - with fellow students also dedicated to research. This is stressed by many of the authors cited here and in earlier sections, not least the APA ad hoc committee (1959, pp. 176-177). Learning from models is an important means and cannot be replaced by methodology courses. An ideal setting would be apprenticeship in a research group under the guidance of an experienced researcher and working side by side with fellow students - this in its turn complemented by courses and seminars where methodological and substantive problems can be treated in a more systematic way than with apprenticeship only (cf. Passow and Postlethwaite, 1970). The institution within which the research group is located should preferably be big and varied enough to afford communication with groups in other specializations so that the perspective does not become too narrow (cf. Kaplan, 1964, p. 865).

The demand on research projects to engage in research training has been touched on already in 2.2.2. In return the leaders of the research projects, whether university based or not, should receive an academic status and influence comparable to that of other supervisors of research training at graduate level - a question that we come back to in the career section.

The aspirant system in the Soviet Union mentioned in section 2.2.2 is found both in universities, institutes of teacher education and research institutes belonging to the Soviet Academy of Educational Sciences. The research resources, however, are concentrated in the Academy institutes, while the universities and other institutes have mainly teaching responsibilities and few other research resources than part of the teachers' own time and that of a few aspirants. It is therefore natural that the research positions of the Academy institutes mainly seem to be filled by recruits from their own candidates and doctors, while the graduates of universities and institutes are likely to become teachers in higher education. Course work plays a minor role in Soviet research training which is based mainly on reading and rather informal apprenticeship in research.

As a substitute for teacher training and experience, field observations have been recommended as a part of the graduate studies. The main reason is that this arrangement should make it possible to recruit young undergraduates from the disciplines without giving up the demand for first-hand experience of education - notably from other points of view than that of the former pupil and student. Not much is known of techniques here - and similar enterprises in other contexts have often failed - but one thing seems to be sure, the field observations must be organised as an integral part of the graduate programme and they should be accompanied by seminars where experiences are examined from the point of view of the disciplines taught and research work considered. It should be a real challenge for those researchers with field experience to try to devise procedures for such training.

Another means of establishing contact with field problems is consultation with teachers who carry out classroom experimentation on an exploratory level. They often need help in designing and evaluating their experiments, and consulting with them could be a profitable learning experience, both from methodological and field orientation points of view, even if the work cannot as a rule be used for dissertation purposes. Such organised consultation has been described by Stanley (1964) and referred to earlier. It might be well to give credit points for such consultation, perhaps even make it a degree requirement alongside courses and the thesis.

2.3.5. Conclusions

Researchers in education should as a rule be trained within the regular system of graduate university education. Preferably they should attain a doctor's degree, but where the national degree system also has an intermediate degree programme of some length this degree may, at least to begin with, be the target to strive for.

The degree programme should be flexible enough to be able to receive candidates with different preparation - teachers, social science undergraduates, and also persons from other disciplines of relevance to educational research.

In addition to regular programmes resources should be built up for further training of researchers and research-related personnel.

Both degree programmes and special courses usually stress research methodology, very often of a quantitative kind. They should, however, cover also substantive areas and alternative methodologies. Philosophy of science and history of education are necessary for giving a perspective on contemporary procedures and problems.

Courses in graduate education help make the training more systematic and time-effective. Then, however, teaching and examination should be adjusted to the level of the candidates, and consultation, supervision of undergraduate research, and smaller investigations should, to some extent, be credited instead of course work.

The most important part of research training is active participation in research in a research-oriented environment which is not too narrow in its specialization and outlook. Organized contacts should be established between graduate university training, separate research units and the field of educational practice.

3. RECRUITMENT OF TRAINED RESEARCHERS FROM OTHER FIELDS

This section will be brief - much briefer than its importance for educational research in the future. It will deal with the types of researchers needed from other fields and the conditions for their involvement in educational matters. Most of what is said is based on the assumption that these categories of researchers cannot be properly trained at pre-doctoral level in departments or schools of education but have to be specialized in their own disciplines before they enter educational research.

In principle most other disciplines and professional fields have some connection with education and could therefore be mentioned in this context. But such a broad conception is of little help, so an attempt will be made to single out the main groups of researchers that could be recruited for disciplinary or inter-disciplinary research on educational processes and institutions in addition to functioning as subject-matter experts in their respective fields.

Seven such groups will be mentioned and commented on very briefly:

(1) Psychologists, sociologists, anthropologists, and child psychiatrists, that is persons from the other social and behavioural sciences. Their role in educational research is evident. It should also be remembered that undergraduates in the same fields should be a major target in policies of recruitment to graduate studies in education.

(2) Philosophers and historians have long been connected with educational research and their function in analysing values and institutions has increased rather in the rapidly changing world of educational reforms.

(3) Economists, political scientists, and geographers are needed for research on educational institutions and have important roles to play in building up a scientific basis for educational planning and administration.

(4) Statisticians and mathematicians are needed to refine research methodology and to adjust it to the particular demands of educational research.

(5) Linguists should be able to exert a considerable influence on educational research in the basic processes of transmission of knowledge, communication, and understanding. The Cronbach-Suppes report (1969, pp. 218-219), for instance, suggests that researchers in the reading field should have their basic research training under linguists and not as traditionally under topic-oriented reading specialists.

(6) Architects and other experts on the planning and construction of buildings are important for the research and development in the physical surroundings of education.

(7) Engineers and computer specialists have a place in the development of the hard-ware side of instructional technology, especially computer assisted instruction.

Here too, it seems best "to catch them young" which in this case means directly after completion of their advanced studies, or even better at the moment of selection of their research subject. A post-doctoral programme introducing the special problems of educational research would at that time be feasible and also profitable to an extent that is more doubtful for persons already having gained research positions in their own fields. The problems of making educational matters visible to researchers in relevant neighbouring fields are similar to those complicating the recruitment of undergraduates. Economic incentives are likely to be important since education is better off at present in many countries than most social science and arts disciplines - perhaps not insofar as career prospects for the researcher himself are concerned but in obtaining money for other costs connected with research projects. The career problem remains to be solved since a researcher from another discipline choosing to work on educational problems may risk landing outside the promotion list of his own field.

4. CAREER STRUCTURE

The last paragraph brings us directly into the career problem which can be seen both from individual and institutional points of view. The individual researcher likes to have an interesting job, with salary and chances of promotion comparable to those which persons with similar qualifications get, and with a reasonable measure of security in his appointment. Usually he is willing to trade some money and some security for the autonomy and interest that are characteristic of his job, but only up to a certain point. The institution (state, research council, foundation, etc.), on the other hand, likes to make use of his capacity as researcher during his productive years and, if possible, place him in another position when experience begins to outbalance innovative ability, to put it mildly.

Different organisational settings have different effects in these respects. Project research attached to small permanent organisations like university departments tends to favour the institutional need for flexibility. In addition, projects often have ample recruitment possibilities among graduate students and are well suited for persons taking up their first jobs after their degree. From the institutional point of view they are defective mainly if they tend to work without sufficient continuity and if they cannot compete for qualified researchers who instead seek permanent positions.

Separate research institutes with predominantly permanent personnel may have all the continuity they wish for, but if not connected with a graduate department they may have difficulties in recruiting young research personnel. Their possibilities of replacing persons who have passed their research-productive age are not very great if special arrangements are not made for promoting them to positions where their experience can be better used. This is the negative side of the personal security aspect.

It is outside the scope of this paper to treat the organisational problems as fully and with similar documentation as the different aspects of training. The questions touched on in the last two paragraphs are of a general nature and have been studied and discussed by sociologists and organisation experts in connection with both governmental and industrial organisations, not least research and development laboratories (cf. Kaplan, 1964, pp.864-869). Just a few remarks will be made here, largely reflecting the author's own convictions. The reader is also referred to the interesting survey and discussion in Malmquist and Grundin (1973, Ch.8).

It seems that research is done most creatively and effectively in rather horizontal organisations with a minimum of hierarchical structure. Such a structure makes it possible for junior researchers to interact directly with seniors (not primarily in the literal, temporal sense) of similar specialisation and interests instead of having to report through intermediate links in a hierarchical chain of responsibility. This is good not only for the training of the young researchers but also for keeping senior researchers alert and in touch with real research problems instead of hiding behind administrative routines. Everyone in the group contributes what he is capable of, ideally irrespective of seniority or formal competence (cf. Bruner, 1962). This conception of a group with a very low degree of formal stratification is also behind the experiments with self-governing groups in industrial organisations (cf. Thorsrud and Emery, 1969).

In university contexts such a pattern is at least easy to conceive, since professors at various levels are supposed to work directly with young people and not through intermediaries. But the risk of patriarchal instead of democratic relations in the group is evident, and another problem is to get enough positions with tenure to let professors use, say, half of their time to function as leaders or methodology experts in research teams within their own area of specialisation. After completion of a project the persons can be regrouped to take up new problems or they can leave research for other responsibilities.

In separate research institutes the senior researchers usually are placed as heads of departments (or similar) and they tend to have their own staff, each with its stratification. Such departments often are charged with a responsibility to watch over development within a certain area or sub-discipline - a function which is not so easily performed in a clear-cut project organisation. For carrying out problem-oriented research, a project organisation can be superimposed upon such a departmental structure. There can be brought together persons from various departments according to the nature of the problem, often breaking through the stratification based on general competence and seniority for the benefit of functional requirements. Personnel from a general pool or hired on a temporary basis can be put into projects side by side with persons taken from the departmental structure. Such loosening of hierarchical ties seems to be frequent in innovative industrial organisations. Toffler (1970) in his provocative book Future Shock talks about the new "ad-hocracy", replacing hierarchical bureaucracy, as being one of the factors behind the increasing rate of change in modern society.

What are then the implications for career structure of this prospect of research being done primarily in ad hoc project groups? This certainly is a matter for discussion, and the following should be regarded as one opening contribution. It seems that researchers in their most active years should not be placed as a rule in a fixed hierarchical structure of positions as department heads, deputy department heads, assistants to department heads, etc., but rather belong to a pool of research staff that can be grouped into projects with a low degree of stratification. This does not mean that all belonging to this pool can be treated equally as to salaries and tenures, but these should not necessarily follow from positions in the organisation. They could be awarded in relation to length of employment, level of research competence, quality of performance, and responsibilities held in projects - to mention some criteria that seem relevant.

Such ad hoc groups cannot exist, however, without an organisational framework providing for finance, administration and support, perhaps also a continuous follow-up of certain areas of research. Leading positions in this framework should be held by persons with personal research experience but not necessarily any longer taking part in actual research.

In a flexible "ad-hocracy" it is important that researchers develop talents in addition to their research competence but without permitting these side-lines to take up too much of their time during their most active period of research. Each project must attend to some of its own finance, administration and support functions - in addition to liaison with those responsible in the overall organisational framework - and this provides opportunities for both natural selection and training for such functions. Each project should give research training to its junior members, and this function provides channels of transfer to teaching positions to be filled with research-trained personnel. Each project needs specialised documentation services in its own field, and this can become a preparation for the more general follow-up of an area that may be a function of the overall organisation. These various research-related functions can be served by different members of a project and prepare them for a continuation of their research interests in research-related careers as institute directors, department heads, professors with primarily teaching functions, etc.

Norms for salaries and tenures vary so much between countries and types of organisation that recommendations cannot be made. The following is a Swedish example of how the norms for an academic research career can be mapped out (Proposition, 1969):

> Graduate studies during which most doctoral candidates either are assistants in university departments or projects, or get stipends, usually on a yearly basis;
>
> Directly after Ph.D. "research assistant" (junior researcher) during a maximum of two three-year appointments;
>
> "Docent" (assistant professor), as a rule during a maximum of two three-year appointments;
>
> Professor or associate professor holding a permanent appointment.

If permanent positions are not available at the end of the "docent" period, the research councils can establish research fellowships for highly qualified researchers. As a rule these are temporary. At each level, however, some persons are supposed to leave their research career for positions outside academic research. And since promotion is based on research qualifications and not on seniority short-cuts are both possible and frequent in expanding areas. At all levels persons following a research career have some teaching responsibility which at least partly can be performed as supervision of graduate students. As a rule persons following a research career have somewhat lower salaries than those in teaching or administrative positions at a comparable level.

In some fields academic research careers are often abandoned for research positions in specialised institutes or industries. Since it is important to retain them as supervisors of graduate research, part-time professorships can be established for qualified researchers outside universities who are supervising graduate research.

Appointments in research projects usually have a lower degree of permanency than regular career positions - most often one year at a time or a maximum of three years. Salaries are paid according to the level of competence comparable to career positions, sometimes with extra pay for administrative duties within projects, or on the basis of salary received in the person's regular position, if he is on leave from such a one. The latter principle can be very complicated indeed to apply in the case of a teacher having extra remuneration for administration or in the case of persons from outside having high salaries based on their regular responsibilities but who have a comparatively low level of research competence. Sometimes the hiring proposition can be baited with the prospect of an academic degree or status.

In separate research institutes the career structure tends to follow the pattern of civil service appointments with salaries mainly coupled to positions, permanency mainly based on seniority in the organisation and without the academic constraint of leaving the position after a fixed number of years. The pros and cons of such a career pattern have been discussed above.

5. FINAL REMARKS

This paper has aimed to present a number of questions for discussion among persons responsible for the administration of educational research. In some parts, the author has been able to document the presentation with experiences from other sources, including research. In other parts, mainly the author's own views and speculations have been reported and this pertains especially to the section on career structure. In concluding with recommendations of a more general kind, it seems proper to stress what the members of an international research committee are most likely to achieve through their capacity of an international pressure group, and two things then come to the fore.

We all hope that educational research on a large scale and with policy implications has come to stay. A vital question for us all is then the training and nurture of educational researchers. This training has to have a solid scientific and professional base and not just be performed through improvised courses of a technical nature. Therefore, we should support basic training in the educational research profession. Our best contribution is to open up training possibilities in our research institutes in close co-operation with those responsible for the academic preparation of researchers - the administrators of graduate programmes.

Included in this recommendation, but important enough to be stated explicitly in this context, is a recommendation to try to make part of this training international. A condition for success is the readiness of research institutes to include resources for research guidance and participation in training programmes and projects. Another condition is that trainees should be supported long enough for them to become real participants rather than mere visitors.

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THE INTRODUCTION OF EDUCATIONAL RESEARCH INTO THE TRAINING OF TEACHERS

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I. INTRODUCTION

Definitions

Before considering the part which research can play in teacher training, it may be useful to dwell for a moment on the nature of the processes which constitute the two key terms.

Broadly speaking, teaching means creating or encouraging situations favourable to learning; it means mediating between the learner and his environment

Teaching is at one and the same time a craft, an art and a science.

As a craft, it consists in applying rules and remedies inherited or discovered by feeling out the way, by trial and error. To deny the importance of this heritage would be unwise. For apart from its traditions and values surviving from earlier social conditions - which we are a little too inclined to decry - this craftsmanship conserves the lessons of sometimes a thousand years of experience, the harvest of man's long progress down the ages.

The art of teaching is also very real. It arises from a sense of "caring", from the empathy and intuition of the person exercising it. It not unlucky, we have all had a teacher during our schooling who, more than any other, left his intellectual and personal imprint upon us.

There are teachers who are endowed with a kind of mediumistic power, just as there are exceptional diagnosticians.

Great artists are unfortunately rare, and the limitations of the craftsman's empiricism are obvious. It is for the scientific approach to produce objective results, to test procedures, methods and techniques and to seek better ones by experiment and observation.

How can educational research be defined in this context? Three authors are not too many to help us do so. According to A. Lalande, science is an aggregate of knowledge and research of a sufficiently uniform and generalised nature leading to concordant conclusions and based not on arbitrary conventions, or the common personal tastes or interests of those concerned, but on objective relationships gradually discovered and subsequently confirmed by specific methods of verification (1). Primarily the essential points in this definition are its rejection of all ambiguity in the formulation and communication of theories and its insistence on strict verification.

And what about research? A.S. Barr proposes a definition which seems to me clear and creative. He conceives it as a systematic effort to understand, set in motion by a need or difficulty of which we have become aware and connected with the study of a complex phenomenon whose importance exceeds immediate personal concerns, the problem being stated in the form of a hypothesis (2). Here, the rational process, illustrated in How we think by John Dewey, is the principal factor.

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(1) A. Lalande: Vocabulaire de la Philosophie. Paris, PUF, 1956.

(2) C.W. Harris (ed): Encyclopaedia of Educational Research. New York, Macmillan, 1960, p. 1166.

It remains to define our object, for we are concerned not with any kind of research but with educational research. The recent study by E. Malmquist and H. Grundin shows how difficult it is to delimit our field but finally proposes a constructive solution. "Educational research should have the aim of contributing to the formation of a basis for decisions as regards practice in clearly identified educational situations." It must by "systematic in its approach to the problems studied" and "objective in its collection, analysis and evaluation of data" (1). The practical aspect is of particular importance here. Educational research is primarily the concern of educators and teachers, and therefore becomes a component of their training. This leads us to the heart of the problem.

One last remark is called for in concluding this introduction. The decision-oriented approach and the emphasis placed by E. Malmquist and H. Grundin on the practical aspect do not conflict with the need for generalisation implicit in A.S. Barr and explicit in Lalande. Nor is conclusion-oriented research excluded. On the contrary, it constitutes the best foundation for formulating decisions or, at the least, confers on them a subsequent ratification.

Many teachers are unaware of the findings of research

Introduced more or less at the same time as experimental psychology at the end of the 19th century, scientific pedagogy established itself gradually. Over the past twenty years the movement has gained in breadth and depth, and in the last decade it has suddenly accelerated.

As in other disciplines, we are thus witnessing a knowledge explosion and, after a phase of non-co-ordination and even incoherence, there is no doubt that discoveries are becoming integrated and are beginning to foreshadow the main lines of tomorrow's education. This education will certainly be based on a dialectic, both subtle and strict, between group-work and individualised learning, aided by an ever more powerful and refined technology.

Unfortunately, this progress in educational science has been achieved in most cases over the heads of teachers, who have been neither truly informed about it, nor involved in its development, nor even able to comprehend this scientific knowledge in those areas where it has been available.

In many Western countries, only a minority of teachers have sufficient training to understand the research reports that directly concern them.

These are the serious consequences of too narrow a type of teacher training in which the craftsman's approach is dominant. While scientific studies at university level - best illustrated by those of the doctor and the engineer - train students for the direct consumption of research findings, the same cannot be said of teachers. As things are, most pre-primary, primary, secondary and higher education teachers should commence scientific teacher retraining the very day they obtain their teacher's diploma.

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(1) E. Malmquist and H. Grundin: Educational Research in Europe, Today and Tomorrow European Cultural Foundation, Europe Plan 2000, 1973, Vol. I, p.23

II. THE RELATIONSHIP BETWEEN TEACHING AND RESEARCH

Teaching itself constitutes research

The desire to avoid transmitting canned knowledge implies that teaching must be based on the real problems facing the pupil. Early on the teacher must learn to state these problems unambiguously, to propose hypothetic solutions, to test them by collecting and analysing pertinent data and to draw logical conclusions.

This rationalised approach of scientific research must little by little become anchored in a way of life of which it constitutes one of the essential cognitive skills.

A teacher cannot encourage pupils to adopt this method of learning unless he himself constantly sets the example. This is a primary reason why research should be integrated into teacher training. It is a question of a way of life and of personal attitudes which, as we know, are more important than any techniques. The old adage "We teach not what we know but what we are" remains as true as ever.

But it is not only a question of one's attitude to work, one's "Einstellung". The teaching process and its corrective role must also be rationalised. In both cases, an empirical approach is also required.

It matters little what form formal education takes in the future - whether the traditional school survives or a new type is invented - the technological model (definition of objectives - input - treatment - output) seems the most appropriate for assessing the value of education and, what is more, the most fruitful source of general progress.

Strictness in the pursuit of the objectives, the keys of the whole system, will more and more imply a search for operational definitions and a constant check on the congruence of objectives, treatment and assessment. The components of the system will themselves be assessed for adequacy or efficiency, as we try to optimise the process. It is clear that only disciplined scientific training will permit such a method of procedure.

Moreover, action research seems to be the best link between laboratory research and the practice of teaching.

Although I am dealing only with the diagnostic and corrective aspects here, the method lends itself to general application.

As we know, action research in education means the systematic application of scientific methods and techniques to the study of the problems of practical teaching. "Its purpose is to provide a quantitative illustration of the essential components of a given operation and the factors influencing the result, and thus to provide a sound basis for decision-making" (1).

Let us take a pupil or group with educational difficulties. The least enlightened reaction consists in making the pupil repeat the exercise which he had difficulty in understanding or the year of study during which the failures occurred. In many cases, this amounts to doubling the dose of an ineffective medicine. A better reaction may already be expected

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(1) J.E. Magee and A.D. Little: Inter-Operation Research, NACA Bulletin, June 1954, p.1252.

from a careful observation of the case bringing into play all the teacher's finesse. But this global approach too has its failures. In such a case, rational analysis and quantification provide the best hope: define the problem, assess its degree of acuteness and evaluate the starting level; formulate hypothetical solutions, test them and adopt the best; initiate treatment, assess its efficacy both during application and on completion.

In short, one is again faced with the classical process of research, its methodological and instrumental requirements.

The art of teaching must build on research

In a noteworthy article, B.S. Bloom recently wrote on "innocence in education" (1). In the article, he meditates on the following theme: as soon as objective knowledge invalidates certain beliefs or customs, there is nothing to prevent a man who knows better from continuing to act wrongly: except that from this moment he becomes culpable in his error.

It is inconceivable that teacher training should not constantly build on acquired scientific knowledge, whether it be a question of developing a curriculum or of methods and techniques for teaching or assessment. To train teachers therefore also means to rob them of their "innocence".

It would obviously be futile to stuff student teachers with the whole encyclopaedia of research; it overwhelms the most advanced specialists and is always going out of date. Only crucial information and major trends should be broached. All the rest is once again a question of attitudes and skills. Teachers must become permanently interested in research and be able to read the reports themselves. But which reports? In their original form, with their full statistical analyses, or in a condensed, simplified form? The orientation and level of teacher training depend largely on the answer to this question.

In my view, there can only be one choice. As soon as possible, teachers should be given access to all the scientific literature of concern to them. This naturally does not mean that henceforth they should only read complete detailed reports, far from it. There is such an abundance of information that no one can read it all. However, they must be able to do it, for if they cannot; they are allowing others to choose, judge and criticise in their place.

Admittedly, there will always be a moment when the experiments or statistics become so technical that they are a matter for specialists only. But if the majority of practitioners in a given field ceases to be able to control the basis on which decisions are made, we have reached the era of technocracy with all the dangers that entails.

The course which we have deliberately chosen calls for a full university education; I will refer to the various possible modes in my conclusions.

(1) B.S. Bloom: L'innocence en pédagogie. Education, May 1972

The teacher as collaborator in scientific research

Any educational research which has no outlet on to educational reality has no raison d'être (1). Admittedly, the path towards decisions is sometimes long and winding and, as education is primarily a political and social matter, many decisions cannot await a scientific basis. Even if such a basis does exist, contingencies do not always allow it to be taken into account.

Whatever the position, a moment comes when the findings of research result in innovations and prove themselves in daily life. Except in cases where he is too much implicated in the problem to form an objective judgement, the teacher should be a privileged collaborator and equal partner of the researcher.

His co-operation should, moreover, begin much earlier ideally at the point when the problem is being formulated. But to generalise in this field is not without danger.

A real dialogue between research workers and practitioners is possible only where a common language and common frames of reference exist. But how can they do so without the necessary training?

The teacher as research worker

Lastly, teachers can themselves be research workers and solve their problems by themselves or in association with colleagues who share their concern. At the present time, these are nearly always exceptional men, who overcome by their worth and courage the tremendous disadvantages inherent in investigations, which cannot be based on a solid scientific and logistical infrastructure.

In many cases, it is nevertheless to be deplored that through lack of adequate initial training, badly collected data are unusable, experimental models are inappropriate, and existing effective techniques are left unused.

Since in most countries of the world, there is a drastic shortage of educational research workers, a great potential is thus being neglected.

Better initial and continued training accompanied by some facilities and the assistance of professional research teams would very probably engender considerable scientific creativity in a number of teachers.

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(1) The hiatus, so often decried, between fundamental educational research and the school is a normal phenomenon. There is a similar disparity between sociological research and social action. Merton gave an excellent definition of the problem. An industrialist does not expect a laboratory researcher to provide him with a commercial proposition but it is the laboratory which provides more and more the elements and the discoveries which, suitably integrated and utilised by industry, create the present dynamism. And on the subject of research Merton concludes: "This requires the renouncement of immediate practical solutions, and the willingness to follow unexpected leads. But it is the only way in which social science can ever become really useful."

R.K. Merton: The Sociology of Science. University of Chicago Press, 1973, 559 pp.

III. RESEARCH IN TEACHER TRAINING

Consideration of the necessary or desirable relations between teaching and research has always revealed the need to give teachers a sound experimental training.

What form should it take ?

Initial training

There is no doubt that in the near future, teachers of all countries will be trained in post-secondary establishments. Two trends appear clearly where pre-primary, primary and in many countries also lower-secondary school teachers are concerned: short training (often two years) in non-university higher colleges or long training (four years or more) at a university.

These two forms of training should, from a certain point on, be treated separately in the interests of balanced curricula. The fundamental principles remain, however, the same.

May I therefore recall that the general objectives of an induction to research are:

1. To create or strengthen an attitude or a turn of mind which induces teachers to think about and organise their teaching along research lines;
2. To enable teachers to understand and criticise research publications which concern them;
3. To make teachers conversant with the main research methods and techniques;
4. To acquaint teachers with the main sources of information on research ;
5. To enable teachers to optimise teaching and learning processes conceived as technological systems;
6. To induce teachers to resolve serious educational problems by means of action research;
7. To prepare teachers to collaborate at all levels with specialised research workers;
8. To train teachers how to verify scientifically the effect of innovations in their classes ;
9. To enable teachers to engage in personal research;
10. To provide an experimental basis enabling student teachers to follow a career in research rather than in teaching, or practising teachers to be usefully seconded to research teams;
11. To give teachers a practical introduction to data processing.

To these eleven objectives, which involve some overlapping, may be added a twelfth which concerns teacher training methodology as such:

To integrate and put into practice by the use of research the theoretical concepts derived from courses in psychology and education.

Were it only to serve this last objective, the place of research in the curriculum would be amply justified. Indeed, if one deals with somewhat complex education problems, one has to apply such different disciplines as educational philosophy, (a key to the definition of objectives), statistics, educational sociology, educational psychology, etc.

Experience shows that a student having to carry out research sometimes becomes aware, for the first time, of the vagueness of much of his knowledge, his inability to apply it to real situations and the lack of practical value of educational theories which appear attractive but do not stand the test of being put into practice.

Generally speaking, in all these cases it is a question of applying one's training to precise and, by definition, new situations, new at least for the individual concerned. But we know that the ability to apply knowledge remains the surest criterion of the value of learning.

Data processing deserves separate consideration. There is no doubt that it will have to be included in the curriculum of tomorrow's teacher training if one considers, firstly, the part which it will play in all intellectual life and, secondly, the role of initiator which the teachers themselves will in due course be called on to play.

A simple piece of research is enough to establish a functional contact with data processing. Even if this first contact is limited to preparing data, transferring it to punched cards, taking the cards to a processing centre and reading the output, a considerable step will have been taken since the simplicity of this most powerful tool will have been revealed. Learning how to use a programme library takes one still further.

Experience shows that the discovery of automatic processing of research data is always fruitful; it engenders new methods of thought and action and arouses among many students and teachers undergoing retraining a will to extend their knowledge of data processing.

Long initial training

In this case, there is practically no problem; often the essential knowledge is already there.

On the theoretical plane, research training normally comprises:

- A general introduction to methods and techniques (it should consist of three parts: principal concepts, universal instruments, specific methods and instruments)

- The construction of standardised tests and tests geared to objectives and assessment

- Descriptive statistics and inferential statistics and the study of the principal experimental models. As computers become more and more readily accessible, the calculation problem disappears. The important thing is to make the concepts and the reasoning understood.

- The principles of data processing - hardware, software.

In all cases, theory should be reduced to a minimum; one either limits oneself to merely arousing awareness (e.g. with regard to specific methods), or the concepts must be given life by the analysis and discussion of research reports, and above all by direct application. Here too, learning by doing, is the golden rule.

This need for practical application produces another, namely that for genuine research work in teacher training colleges, since what is true for the pupil is also true for the teacher. Only direct and continuous contact with research makes it possible to follow the rapid development of methods and techniques and promotes an awareness of the essentials.

There is no question of turning all student teachers into high-grade research workers; the aim is to produce sound practitioners and especially consumers of research findings.

This is why the direct and complete treatment (1) of a few simple problems is preferable to any attempt at an exhaustive study (which would in any case be purposeless). Nevertheless, participation, even if only brief, by students in complex research work will reveal to them a reality which they would otherwise be unlikely to perceive.

Initial training, which is inevitably fragmentary, will continue during professional life. We shall see how in a moment.

Short initial training

I have termed "short training" that which covers one or two years, often in non-university establishments (e.g. former teacher training colleges). The professional training of upper secondary school teachers also falls into this category. It follows a long period of specialised university studies and in certain countries is very short, if not virtually non-existent. This is still the case in Belgium.

One is here faced with a considerable difficulty to which no immediate satisfactory solution seems possible. Short-term training, reserved for primary and lower secondary school teachers, more often than not only attracts average if not weaker students; the candidate level will only improve when they become full members of the university (2).

As to the training which in some cases future upper secondary school teachers acquire in a few dozen hours, it does not amount to much. In such cases, reliance must be placed almost entirely on "continued" training.

Be that as it may, the broadlines of the research curriculum remains the same, as does the training methodology, although the units and examples become smaller and smaller.

As a number of countries have understood, the training of teachers for the upper secondary level calls for an extension of university studies. The length of this period will depend on the place already given to educational psychology during the specialised studies. It is impossible to go into this question in detail in this report.

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(1) Definition of the problem, hypotheses, experimental model, data collection, processing and analysis, conclusion, report.

(2) I do not attribute magical powers to the universities. The quality of recruitment depends on socio-economic status and the prestige attached to higher education.

Continued training

Without reopening the discussion on nomenclature, I include under this heading continued training proper and the introduction of practising teachers to educational research.

Introduction to educational research

As a rule, teachers take the time needed for continued training from their off-duty hours. Sometimes they attend residential seminars which vary in length from a weekend to a week or even two.

Such teachers are often about 30 or 40 years of age, and thus not so very ready to go through lengthy theoretical studies.

One should therefore resolutely opt in favour of practical training from the outset and only introduce theoretical and statistical knowledge when necessary or when asked for by the teachers.

Among the various strategies which we have tried out at Liège the following three proved efficacious.

Programmed learning seminars (1): During the first year an introductory seminar is arranged for some 30 teachers of the same subject. The initial objective is the establishment of a linear programme. Introductory theory is reduced to a minimum, and further concepts are only added when incidentally required. This objective is then rapidly expanded and leads to a real retraining.

As a first step, the teachers choose some aspect of the subject they teach for programming. A discussion then ensues on the definition of the objectives to be translated into behavioural terms and classified according to psychological or logical criteria.

It is at this moment that teachers generally receive a healthy shock which determines their future attitude. They realise that ideas and concepts which they handle every day and with which they considered themselves thoroughly familiar, in fact conceal vast unexplored areas, and that this explains certain educational failures or weaknesses in performance. The teachers are also struck by the exactness it is possible to achieve by analysis. Then follow the identification of the prerequisites, the preparation of the programme, the pre-test and the post-test, the selection of experimental samples, etc. The results are always processed by computer.

Teachers often undergo a profound change in attitude and develop enthusiasm for an aspect of their job of which they were unaware or believed inaccessible to them.

After the first year, programming teams are formed and continue to work in conjunction with the research centre from which they received their introductory training. Instances of such collaboration have now been proceeding for a number of years, and the demand for them has never diminished.

(1) Organised in consultation with the Study Organisation Section of the Ministry of Education in Brussels.

Pupil assessment seminars: The principle is the same as for the programming seminars, but in this case the pivot of the activity is the drawing up of descriptive rating scales, of standardised or criterion referenced tests.

The initial shock is given either by a simple experiment revealing the unreliability or lack of validity of traditional marking systems, or by the definition of the objectives to which the measurement instruments will have to be geared.

In this case too, teachers are usually surprised to discover accessible techniques which prove very useful in their daily work.

A simple test: We have occasionally used an even simpler procedure. To a group of lower secondary school teachers who happened to ask to try their hand at research, we suggested Roller's Test-dictionnaire No. 5 (1) which they had never even heard of. For several members of the group this led to great discoveries and work which has continued for several years.

We recently recommenced a similar experiment with the aid of the cloze test (2).

In all these cases, two conditions seem essential to success; the fact that the teachers must deal with problems directly connected with their daily work and the presence of highly qualified research workers who are unreservedly accepted as members of the group. The research worker must never dispense instruction; he is there to provide information or help when it is required.

Continued training proper

This problem is simpler, and the methodology differs only in the starting level being higher.

Again, the main requirement is to associate teachers in work of direct concern to them and to provide them with the help they ask for.

One of the roles of research workers consists in this case in selecting such research literature as is likely to interest teachers and passing it on to them, often in its original form, since thanks to their basic training they are in a position to understand it.

In general, teachers have a feeling of security if they remain in contact with the establishment which trained them and with science in the making. The greatest difficulty resides in reconciling their often heavy professional burdens with the equally heavy demands of relatively high level research.

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(1) S. Roller: Test-dictionnaire No. 5. Geneva, Laboratoire de Pédagogie Experimentale, 1957

(2) G. De Landsheere: Le test de closure, mesure de la compréhension et de la lisibilité. Paris, Nathan; Brussels, Labor, 1973

IV. A NETWORK OF RESEARCH CENTRES

Continued training is too often discussed without sufficient importance being attached to the quantitative aspect. To enable a handful of teachers to undergo such training is already something gained particularly since they, in their turn, can become agents of dissemination and pressure. However, it is doubtful whether the effects of refresher training make themselves felt at the level of the school population if the number of teachers undergoing such training is below a certain level.

For example, in a small country like Belgium, approximately 100,000 pre-school, primary and secondary education teachers below the age of 45 are waiting for periodic refresher training.

A long-term national policy alone will permit effective action to be taken. This need coincides with the pressing need for a research network which should be gradually extended to serve the whole education system both for research proper and for action research.

I would propose that a pyramidal structure be set up, the summit of which would be a national or federal body to co-ordinate research. It could comprise mainly representatives of administrators responsible for organisation matters, of non-teaching personnel, of teachers and research workers.

The research and development policy decided on at this level would first be diffused to a primary network of research centres, built up where possible on the basis of existing university departments. This would ensure a solid scientific basis, a powerful research infrastructure (which there is no sense in paying for twice) and high-grade research workers, who in the educational field will probably remain very rare in Europe for a number of years to come. One would thus at the same time ensure the continuance of fundamental research without which a research service runs the risk of losing its vigour and working on a merely routine level.

To the university research centres would be attached practical teacher training centres which would also be developed as centres for research, documentation and refresher courses. It is from these secondary centres in particular that action research would spread to cover, after a certain time, most of the schools of a country. Where child psychology centres exist, they would naturally be integrated in the overall system.

For such a structure, with its regional contacts, to remain alive, there must be permanent communication and movement from the base to the summit. In particular, research workers would work sometimes in the primary centres and sometimes in the secondary centres. Moreover, teachers who show a special aptitude for research would be seconded from their usual functions for relatively long periods (at least one year if possible) and participate actively in the work of the centres. They would either become researchers themselves or return to co-ordinate and stimulate the activities of their schools.

V. CONCLUSION

My intention has been to go beyond a general description and formulate precise proposals based on practical experiments in initial and continued training.

My first concern was to avoid utopianism. The educational forms of the forthcoming decades are becoming fairly clear. Following the recent example of medicine, educational science will speedily gain in rigour and efficacy. In fact, our theoretical and experimental knowledge is already in a position to introduce considerable improvements in the education system. One essential condition (though there are others) is to ensure permanent communication between practice and research. Most countries are still far from having reached this stage.

As I said at the outset, education (like medicine) cannot be a dry science and even less a technocratic one. Man's infinite complexity precludes an exhaustive knowledge of his nature and behaviour; his extreme sensitivity makes any mechanisation of human relations unbearable.

Perhaps, however, we are entitled, for the moment at least, to grant a certain preponderance to scientific pedagogy, because it is entering on its first great period of expansion after thousands of years during which the art and the craft of teaching reigned supreme.

Introducing teachers to practical research seems an excellent method of scientific training. But I certainly would not give it exclusive importance in teacher training. I believe equally in the gradual development of a sense of "caring" in a Hippocratic, practitioner-patient sense.

SOME PROPOSALS FOR EUROPEAN CO-OPERATION IN THE TRAINING OF EDUCATIONAL RESEARCHERS

by

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At the Colloquium of Directors of Educational Research Organisations in London in 1971, Professor Sandven drew attention to the limitations of small countries which could not hope to provide a complete range of training facilities. Inevitably, much of the necessary training would have to be sought abroad. Clearly, there was a possibility of formal European co-operation to meet the training need. Others joined in the discussion pointing out that even in relatively large countries the range of resources available was limited and that rational development should allow centres to specialise, and no-one should attempt a complete coverage of all aspects of educational research. It was pointed out too that there already existed in some countries facilities for training researchers which were not fully used. With relatively modest use of international funds, access to existing programmes could be made available to those countries where such resources were scarce.

This paper is prepared in the light of those discussions in London. It consists of a number of general considerations and certain specific recommendations. It is written within the context of the report of the Working Party. Goals, contents and methods of training are described in that document and general proposals are made for co-operative action. None of that is repeated here. This addendum simply amplifies some of these proposals and tries to translate them into concrete form. The addendum follows the format of the general report which is concerned first with initial preparation of researchers, in a subsequent section with "formation permanente" of existing researchers, and, finally, with programmes which would prepare experts from other disciplines to participate in research in education.

In view of current economic difficulties, it is unlikely that substantial funds will be available immediately for new developments. However, many of the proposals made here do not involve additional funds but the redeployment of existing resources. The fullest use of the available opportunities must be sought first, but the long-term prospects for further developments must not be neglected either.

1. INITIAL TRAINING

The first and essential characteristic of a research worker in any field is scientific imagination, the ability to make new syntheses, to see new points of departure. This is an area where "the spirit bloweth where it listeth". We can only cherish it, give it space to develop and provide the training in rigorous scientific analysis which will help translate these new concepts into educational practice. The opportunity to develop these talents, however, varies greatly in different parts of Europe. The first European task, therefore, is to seek out this talent and to make sure that access to appropriate training in educational research is available universally and not merely to those who happen to live in regions with established training programmes. Seventy years ago Aitken and Rutherford were able to obtain training in mathematics and physics which was not available to them locally. It is important to ensure that the same opportunities are available now for the leaders of educational research in the twenty-first century.

It is recommended that:

- A list of programmes of training in educational research in Europe be prepared and circulated annually throughout Europe.

- A list of scholarships available for training in educational research be prepared and circulated annually throughout Europe.

- If necessary, an approach be made to governments, foundations and other organisations, e.g. teachers' unions, to establish further scholarships for study in Europe for potential educational researchers (comparable to those provided by the Kellogg Foundation in Canada and the Ontario Teachers Federation).

Initial preparation should be available as set out in the report, to recruits from teaching and from university programmes in the social or the behavioural sciences. Many of our most distinguished educational researchers have been recruited from the social sciences; other original researchers have come from the classroom, e.g. Bernstein and Jackson. Both sources are likely to continue to be important.

If the best recruits are to be attracted, researchers will need to be alert to potential scholars whether they have facilities for training in their own regions or not. Recommendations by inspectors or principals are not necessarily the best basis for selecting teachers for further training as educational researchers. Administrators may be inclined to recommend the conventional rather than those with an original cast of mind. Researchers, therefore, will need to look at the teachers they encounter in the course of their investigations for suitable recruits and encourage them to apply for scholarships. Perhaps the most effective way of attracting teachers to careers in educational research is to involve them in research and to provide immediate opportunity for experience in both fieldwork and laboratory research in the hope that they will become addicted.

It is likely, too, that professors will not encourage the most able and creative students in the social sciences to consider a career in educational research. Researchers will need to seek out suitable students and encourage them to embark on training in this field. As with teachers, involvement with projects, either fieldwork or laboratory studies, is likely to be the most effective way of encouraging students in these fields to become interested in educational research.

It is recommended that:

- Researchers throughout Europe be invited to nominate candidates for scholarships for research training (comparable to the current programme of the Scottish Council for Research in Education which invites university departments of education, psychology and sociology to nominate their best student for an annual award in the form of funds for research projects).

The report has pointed out that the ideal theoretical framework for educational research should be trans-disciplinary, but that this is an ideal which we are not likely to achieve easily. The recruit from teaching particularly will frequently need to follow an organised and coherent programme of study in an appropriate basic discipline. The study will supply the basic structure for future work and thought. Broadbent among others has pointed out the importance of training in a particular field as a source of hypotheses. For this purpose it is necessary to obtain mastery of a discipline and not merely of those aspects which too often in the past have been thought relevant to education. The educational researcher cannot be a mere dilettante, "a picker-up of unconsidered trifles", of crumbs from the rich man's table. His knowledge of the basic discipline must be sufficient to enable him to contribute to the development of the discipline and not merely to be a parasite upon it. There must, therefore, be available to recruits from

teaching adequate support or pursuing programmes of study in the base discipline. Some countries already have provision for transfer programmes which provide practising teachers with training in a social science. In many cases, it is possible for students to obtain these degrees on a part-time basis. There should also be adequate provision for full-time study.

It is recommended that:

- Provision for secondment on sabbatical study on full salary for teachers, currently available in some countries (e.g. England), be available for programmes of fundamental study in the basic disciplines as well as more professionally orientated studies, and on a European not a national basis.

- Similar support be available to students from the physical or biological sciences or the humanities who wish to have appropriate preparation for a career in educational research (comparable to the conversion awards currently made available through the Social Science Research Council in Great Britain).

- Information about programmes of part time study of this kind currently available in some universities (e.g. Birkbeck College, London, the University of Glasgow) be circulated to universities throughout Europe.

- Universities be encouraged to establish such programmes where feasible by way of earmarked grants.

Students with a background of teaching will have from experience a knowledge of educational practice, but it will be incomplete and they may lack the structure provided by a formal programme. They will require, therefore, a period of formal study of educational theory and an opportunity to become acquainted with aspects of education they have not been involved in personally. Recruits directly from the social sciences will also need this kind of programme with greater provision for practical experience of education.

It is recommended that:

- Programmes of part-time study of educational theory currently available in the universities of some countries (e.g. England, Scotland, Ireland, USA) be circulated to other universities throughout Europe, and where feasible governments be encouraged to consider earmarking grants to universities for the establishment of such programmes.

- Scholarships be available for formal study of educational theory at an advanced level both to practising teachers and to graduates with appropriate backgrounds in social or behavioural sciences as a preparation for careers in educational research on a European and not a national basis (studentships comparable to those provided by the Social Science Research Council in Great Britain are appropriate).

Both groups of students will require training in technical research skills. A weakness of some educational research in the past has been the mindless application of inappropriate statistical techniques. The researcher has to be so thoroughly at home with his techniques so that he can adapt, modify and go beyond them. Not all researchers will contribute

articles to Psychometrica or the British Journal of Statistical Psychology, but all should be able to read these journals critically. Competence in providing this kind of training is concentrated in a small number of universities. While it is reasonable to expect that universities throughout Europe will provide training in the basic disciplines and in educational theory, not all can expect to provide training in a full range of technical skills.

It is recommended that:

- Existing European scholarships be used to enable students to take courses of advanced study of research techniques at designated centres throughout Europe. These programmes should include formal instruction and also participation in all aspects of research projects, the creative and the technical.

- Those centres where training of this kind is now available on a part-time basis be encouraged to make provision for students from other countries and educational authorities be encouraged to provide appropriate employment for native and foreign students pursuing these programmes of study.

Communication skills can be learned. The scholar in education has to listen as well as speak; read as well as write; understand graphs, diagrams, flow charts as well as prepare them. Researchers in education need to learn the skills of documentary research, the use of information retrieval systems and the preparation of their own information retrieval procedures.

Not all scholars will be listened to for their oratory nor read for their literary brilliance, but all can be taught fundamental communication skills and to adapt their style of presentation to their audience.

It is particularly important in Europe where we have many languages that a satisfactory level of communication in at least one foreign language should be included in the training of the educational researchers. While much material is now translated into the major European languages, much specialised material remains untranslated, and the researcher who, for example, has no command of French has no access to a great deal of Piaget's work.

It is recommended that:

- Training in communication and information retrieval skills be an integral part of the programme of preparation of researchers, and scholarships be specifically designated to enable young researchers to pursue a short course of study at centres which have developed particularly effective information retrieval systems or have demonstrated particular skills in communication.

- Mastery of one major European language other than the mother-tongue be an essential component of the training of educational researchers.

Not all scholars can or should be expected to reach the same level of competence in all aspects of this necessary basic preparation. The Leonardos are dead. The team complementing each other's skills has replaced the isolated scholar of the past who had to conduct all aspects of his studies from his cell. The members of the team may have special abilities. They must also have sufficient knowledge of each other's areas to appreciate each other's contributions.

II. TRANSFER FROM OTHER DISCIPLINES

The preparation of scholars from other disciplines for a career in educational research is a matter of growing concern. In Britain, one of the largest sections of the Chemical Society is the group for study of chemical education. There are a number of centres and universities throughout the country where chemical education is a major focus of research. This development in chemistry is paralleled, though on a smaller scale, by similar developments in other areas and can be expected to continue. The facilities outlined above for young scholars should also be available to scholars with an established research reputation in another discipline so that they may acquire the appropriate background for research in education.

Care should be exercised in selecting only those who have demonstrated competence in their own area and earned the respect of their colleagues. They must have shown interest and potential for development of educational research skills. In general, then, these will be men of some status in their own field and probably with family commitments. The size of the scholarships needed will, therefore, be substantial but may be expected to cover educational science, educational theory and technical skills. The first two can probably be acquired by individual reading and seminars in their own institutions. Scholarships for formal preparation will probably be most necessary in the area of technical research skills.

It is recommended that:

- Fellowships for established scholars in fields other than educational research who have acquired appropriate backgrounds in behavioural science and educational theory be available at a level commensurate with their university salary to enable them to acquire training in the technical skills of educational research at the designated European centres (this provision to be comparable to the sabbatical leaves now available to staff at some universities); fellowships currently provided by some foundations should be available for this purpose.

III. FORMATION PERMANENTE

Finally, there is the question of "formation permanente". Some scholars will want to take an appropriate post-doctoral scholarship for advanced study in specific areas. While this will normally be by attachment to an established research team, it may also include formal instruction.

It is recommended that:

- Fellowships be established to enable senior scholars of education to spend a substantial period, normally an academic year or two, at European research centres pursuing subjects of particular interest to them. The value of these fellowships should be the equivalent of a normal professional income (the Spencer Fellowships at Stockholm provide an appropriate model in some respects).

There is a need for shorter-term seminars, colloquia and congresses for established researchers. Research centres should be encouraged to conduct seminars for scholars from throughout Europe in areas which are of particular concern to them.

It is recommended that:

- Funds be sought through the Council of Europe from governments, foundations and other appropriate bodies for regular seminars, colloquia and congresses to be held on specific topics. These meetings would normally include senior and junior scholars. They may be short seminars of two or three days or congresses of two or three weeks (the Social Science Research Council of Great Britain provides programmes of this kind currently e.g. language and learning and survey research. Scholars from other European countries are invited).

IV. CONTENT OF PROGRAMMES

The major concern of this addendum up to this point has been the necessary structures which can be provided on a European basis for training of educational researchers. Equally important is the preparation of the curriculum in these areas. While the particular content of programmes in basic disciplines will necessarily vary from university to university, it will be appropriate to establish working parties consisting of educational researchers and scholars in these disciplines to prepare agreed content for each of them. While it is impossible to specify in detail, it should be possible to designate subfields and areas which are essential in each of the basic disciplines.

Similarly, in educational theory, we are concerned as researchers that our students and successors should have training in appropriate aspects of educational theory. It is not possible to cover all aspects, and, therefore, a working party should be established to designate the major aspects of educational theory which are essential for the potential scholar.

It is perhaps easiest for the researchers to prepare agreed syllabuses in technical areas. We can no doubt agree amongst ourselves without great difficulty what are the technical skills that the new educational researcher needs. It will not, of course, be possible that all researchers have the same skills, but we can designate those topics which we think all students should have mastered and outline the alternative specialisms that should be available.

It is perhaps easiest to begin with the content of seminars, colloquia and so on that are currently in existence. Programmes of this kind have recently been conducted in Sweden and the Netherlands in evaluation and others have been held elsewhere. These programmes provide a basis for consideration and discussion by the working party suggested.

There already exist in European centres of empirical educational research, resources which if they could be harnassed and focussed could provide a full range of preparation for educational research from the most fundamental to the most advanced level. What is necessary is for us to make full use of the resources that we have currently available to us.

COMMENTS RECEIVED FROM EUROPEAN RESEARCHERS
ON THE WORKING PARTY'S PRELIMINARY CONCLUSIONS AND
RECOMMENDATIONS

Introduction

The Working Party decided that its preliminary conclusions and recommendations should be circulated by the Secretariat to some 60 leading European researchers with a request for their comments. This was done in October 1973. By February 1974, thirty-six replies had been received. Of these, five promised detailed comments which unfortunately did not reach the Secretariat; four agreed with the conclusions without further comment; two expressed general disagreement, without specific criticisms; and twenty five, while expressing general approval and in many cases congratulating the Working Party, brought forward suggestions and criticisms or further stressed points already made in the paper. A number of these suggestions were taken up in the final conclusions and recommendations of the Working Party.

Certain replies indicated a somewhat hasty reading of the paper and some of the points made could have been answered by reference to other paragraphs. Nonetheless it was possible to analyse the replies under the headings used in the preliminary paper, adding the heading "General Points" to bring in those remarks which were not addressed to specific recommendations. However, many of the comments on one question have evident repercussions on others, and for this reason the synopsis should be read as a whole. Lastly, MIRANDA (Tilburg) and TARDY (Strasbourg) submitted particularly extensive and general comments, not so much on the paper itself as on the whole question of research and research training. These comments have been reproduced in full (see Appendices).

It was clear from a careful reading of the full texts of the replies that there were large areas of agreement and a considerable satisfaction with the principles of the paper and with the work of the Working Party.

1. COMMENTS ON THE PAPER

Paragraphs and page numbers refer to the section "Conclusions and Recommendations" (see pp 3 - 14)

1. BACKGROUND

No comments.

2. DEFINITIONS OF EDUCATIONAL RESEARCH

"Empirical"

This term, its definition and the value of the emphasis placed on it by the paper, gave rise to much comment.

In the first place, the francophone response (1) was confused as to the interpretation of the word, which for some had a pejorative connotation implying a random approach to research based only on personal experience and experiments, without a conceptual and scientific framework.

(1) e.g. HUTIN (Geneva), AVANZINI (Lyon)

In the second place, some comments were frankly unfavourable, e.g. TAYLOR (London): "I am not convinced of the necessity or value of the strong emphasis placed by the committee on empirical research .... If it means work that is undertaken by means of experimental techniques, questionnaires and surveys, etc. then a great deal is left out that should receive attention. It is not simply historical and philosophical studies that are non-empirical, but also many of those in certain branches of psychology and in sociology." JOHANNESSON (Lund) also found that there could easily be the misunderstanding that theoretical aspects are less important, and asked that it be more strongly underlined from the beginning "that empirical research without a theoretical basis often leads to narrow results difficult to interpret". Finally TARDY (Strasbourg) underlined strongly that in his view "behavioural" research and "empirical" research share the defect of being able to describe and analyse only the existing system and its applications.

"Educational"

VIKAINEN (Turku) asked the Working Party to decide "what distinguishes educational research from the rest of social research", particularly sociological and psychological research. This would enable it to give more attention to the contents of research work, which would in turn enable them to adapt training so as to lead to better research work. She deemed it particularly important to make this distinction in view of the diversity in the background of recruits, and especially the numbers trained in social and behavioural sciences. AVANZINI (Lyon) suggested a greater concentration on "recherche proprement didactique", i.e. specific teaching problems, and cited our current pre-occupation with the "pedagogie de compensation" as opposed to trying to define the nature and cause of disadvantage.

Ó SUILLEABHÁIN (Maynooth) picked out as the key the word "integration" introduced in paragraph 6, page 4 , and suggested that this integration could be best achieved by concentrating attention on concrete problems. On the other hand de JONGHE (Louvain) felt that the definition used was too narrowly "educational" and concentrated too much on the teaching process to the detriment of the social context. Both TARDY (Strasbourg) and MIRANDA (Tilburg), in their very general remarks, lent support to this view. HENRYSSON and LINDBERG (Umeå) held that although "there is reason to give the efforts made at an educational theory prominent position just because they seem to be the very essence of a uniquely 'educational' research", for the present they regarded it as necessary "to work with a wide as well as a narrow definition of the territory of educational research". An attempt to classify all educational research work in Sweden had shown that only about 50% could be brought together under 'research on teaching'. Finally a number of UK replies called, implicitly rather than explicitly, for a much greater emphasis on teaching problems.

"Transdisciplinary"

Tied to a certain extent to the definition and objectives of educational research was the question of transdisciplinarity. TAKALA (Joensuu) replied "I agree with the statement that 'the theoretical framework should be of a transdisciplinary nature' (1). I hope that the Working Party would use time and energy for analysing what it means. For several years, we have been speaking about 'transdisciplinary research', but very little progress has been made. There are probably several barriers which have prevented the development of transdisciplinary approaches and they should be examined in detail."

(1) Subsequently amended by the Working Party to "of an interdisciplinary nature, but tending towards transdisciplinarity".

Corroborating Ó SÚILLEABHÁIN (see above), VIKAINEN suggested that the only way to achieve the integrated structure postulated in the paper was to make the transdisciplinary theoretical framework "explicitly educational ... the analysis and research of teaching should be placed in the central position. All other areas should be examined from the integrating viewpoint of teaching." Similarly de JONGHE (Louvain) held that it was obvious that all problems in education were interdisciplinary; but that the sine qua non of a transdisciplinary approach was for all the members of a multidisciplinary team to work simultaneously on the whole ("L'entièreté") of the project. Other replies took up the point that "transdisciplinary integration" must be reserved for actual research work, and not be applied in training, where a thorough specialisation was preferable.

"Conclusion-oriented" and "decision-oriented"

HENRYSSON and LINDBERG (Umeå) "do not consider a division into decision-oriented and conclusion-oriented research meaningful"; and TAYLOR (London) was also unhappy about it. They, and others, were worried chiefly by the organisational implications of the distinction - creating separate types of research institution, or even of researchers - and were concerned to stamp it out, especially in the minds of administrators. However, HUTIN (Geneva) "entirely approved the remarks concerning the relation between the academic type and the type aimed at producing conclusions and decisions. It is indispensable to encourage more strongly than in the past the taste of young researchers for working towards action." Finally KYÖSTIÖ (Oulu) remarked that "if the decision-oriented approach aims at solving practical problems beside theoretical ones, both approaches can be combined.... There is seldom any methodological difference between the two."

3. REGULAR TRAINING FOR EDUCATIONAL RESEARCH

In the 3rd paragraph on page 6, the "preliminary recommendations" spoke of "a second or advanced stage of university education, that is after an introductory level or first degree period of two to three years", which would lead to "a degree which in some countries corresponds at present to a doctorate, in other countries to a master's degree" (1). This unavoidably ambiguous definition, and the inclusion of two-year degrees, led to some confusion, the "second stage" in particular being confused with the "second cycle" in France.

LEPISTÖ (Helsinki) and KYÖSTIÖ (Oulu) made the point that there were advantages in a basic degree common, at least in part, to teachers, other behavioural scientists, and future researchers; not least "to emphasise the need to convey the basic ideas of the scientific development of education to all practitioners". Furthermore KYÖSTIÖ suggests that the 'normal' way of training "neither is nor should be the only one possible. There are some individuals who are able to progress more independently and ways must be kept open to them.... The training of researchers should not be bound to an obsolete degree system which has been established in other circumstances and for different purposes." Thus people without first degrees who show capacity by their writings or by work in research institutes might advance without formal degrees.

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(1) Subsequently amended by the Working Party in the light of this comment (see p. 6).

This view is echoed to a certain extent by TOGNETTI (Rome) who recalls that a researcher can 'learn by doing' in a research centre run by experts on correct methodological lines; and that, for the technical skills at least, this is preferable to theoretical learning. BJÖRNSSON (Stockholm) also mentions that such organisations as his Stockholm Pedagogical Centre can contribute to research training too, particularly in practical experience of applied research. THOMSEN (Copenhagen) points out that educational research institutes cover such a wide field that it is impossible for them to base their work on uniformly educated researchers. "A basic common education of potential educational researchers is desirable, but must be followed up with specialisations, attuned to the requirements of the institute in question and therefore carried out at the said institute." The training of a researcher, therefore, by no means ends with his research degree.

3.1 Goals

HETTEMA (Tilburg) thought that some of the goals listed could usefully be applied to a four-year undergraduate course which would qualify the student as a 'junior researcher'. Specifically, "a thorough knowledge of a discipline" should in this context become "elementary knowledge of a discipline and an advanced knowledge of those areas of that discipline that are of direct importance for educational research, e.g. in psychology, learning, development and individual differences." Research skills and direct experience should be given particular weight, at the expense of communication skills (which would be omitted) and "integrated understanding of the educational process and of educational institutions" which should become a 'general orientation'. 'Junior researchers' should then begin work in research institutes, passing from one special field to another, and subsequently obtaining a graduate degree - incorporating the goals reduced or left out in the undergraduate degree - and so becoming 'senior researchers'. This view was exceptional in that other replies gave more weight to a thorough knowledge of at least one discipline, and were in general reluctant to make training at undergraduate level too specific to research, for fear of flooding the small employment market.

KYÖSTIÖ (Oulu), Ó SÚILLEABHÁIN (Maynooth) and SANDVEN (Oslo) all felt that a single discipline was too narrow a base for a researcher. SANDVEN's view was that "the psychological and the social aspects of education are so closely interwoven and so basic to the understanding of the educational process that it is inadvisable to leave either of them out of a systematic training programme for researchers"; KYÖSTIÖ called more generally for "two majors in behavioural sciences", while Ó SÚILLEABHÁIN "would like to see a researcher competent in more than one field." HETTEMA, on the other hand, mentioned the "embarras de choix" which could lead a research trainee to dissipate his efforts over too wide a field. "A good generalist ... is the man who is specialised in many different sub-areas. To become that kind of researcher one has to start as a specialist in one area."

KYÖSTIÖ also mentioned that the goals listed seemed to aim "more in an empirical than a theoretical direction. If we think, e.g. of the training in educational philosophy, comparative education and so-called hermeneutic research work (soft methodology) the list is insufficient." LEVY-LEBOYER (Paris) asked that more emphasis should be placed on the need to diversify in education, and particularly on the conflict of organisational objectives as opposed to the learning objectives of individuals. Finally NISBET (Aberdeen) suggested that some attention should be paid to different "research styles", and that in "research skills" a distinction might be made between (i) research techniques and (ii) understanding of R and D, action research, policy-oriented and conclusion-oriented research, etc.

3.2 Recruitment

BLACKSTONE (London) made the point that two fields of recruitment are not far apart, in that, in her experience, "relatively few practising teachers go into research and those who do are likely to have a social science degree". However, WRIGLEY (London) was concerned that "if one of the main sources of recruitment is as indicated, there is a danger that the traditional gap between researcher and practitioner will be widened.... it is not surprising that teachers are suspicious of researchers who have never taught." NISBET (Aberdeen) saw advantages "in trying to train the three different groups (teachers, social science graduates, and others) together, in part at least, so that each can learn from the others".

JOHANNESSON (Lund) quotes the recommendation that "measures should be taken to seek out and recruit promising young people wherever they happen to commence their career" and asks how these promising young people can be selected and engaged. BJÖRNSSON (Stockholm) stresses that "prospects concerning the different career opportunities available should be pointed out already at the recruitment stage. Research candidates should have the right to know, at the very start of their training, the type of income they can expect on a long-term basis in the various fields."

3.3 Training programmes and their location

A number of responses indicated that a university might not necessarily be the only, or even the best location for the training of researchers. HENRYSSON and LINDBERG (Umeå) held that "a single department of a university hardly has the long-term resources, either personal or economic, which are needed to give research students a training of the desired quality. In every department there are some established researchers, and as a rule the main part of research work is done within their special fields... the broad survey of education which is desired can hardly be provided by each single department.... it would therefore be desirable for joint 'breadth' courses to be organised co-operatively by the various departments on the national as well as the European level." Similarly Ó SÚILLEABHÁIN (Maynooth) said: "the idea expressed of working in teams is sound, but from the point of view of finance and personnel it would be hard to achieve except in the larger universities".

LEPISTÖ (Helsinki) pointed out that the trend of reform in education is now towards 'holistic' changes affecting every aspect of whole levels of education. The extensive projects, rather than narrow investigations, which these changes require "emphasise the necessity of an inter-disciplinary or cross-scientific approach to the training of research personnel... this matter cannot be left wholly to the responsibility of universities, since their organisation, mostly based on subject divisions, does not easily lend itself to the flexibility needed in this kind of training." He suggested that training should be organised and co-ordinated by the central administrative organs, such as National Boards of Education, in co-operation with universities. BJÖRNSSON (Stockholm) also suggests that institutions such as the Stockholm Pedagogical Centre, being "in reality a part of the town's school system which is naturally a great asset in research work" might be involved in training. However, although "it would seem natural that the universities' research institutions should acquire a certain research profile, for institutions such as the Pedagogical Centre this is not so. We have the whole of Stockholm's public school system as our research field - from junior school to adult education - and due to the Centre's character as a service institution we must cover all fields of applied educational research. We believe it to be a good thing that both these types of institutions exist." In this context NISBET (Aberdeen), while agreeing with the views expressed in the paper, adds: "the isolation of the universities can only be overcome if the staffs of the universities become involved in, or associated with, the work of other parts of the education service - for example, curriculum development, national examinations, or participating in national policy-making".

Finally, HENRYSSON and LINDBERG (Umeå) state that "the organisation and quality of the training of research students are ... dependent on, among other things, working conditions and career possibilities for researchers, and the way in which research is financed ... The necessity of creating a scientific milieu cannot be insisted upon too strongly. In Sweden, where there are only a few permanent researchers and where the others, the great majority, are directly dependent on grants or on the influx of students, there are hardly the essential conditions for a good scientific milieu."

3.4 Contents and methods

A number of subjects were advanced to add to the list of desirable contents: the theory and history of science (HENRYSSON and LINDBERG, Umeå); comparative statistics (de JONGHE, Louvain); the different traditions of educational knowledge and research and their philosophical foundations, as well as comparative analysis of the basic value structures in societies, and their characteristic problems and solutions (TAKALA, Joensuu); programming and budgeting (HUTIN, Geneva); and information retrieval (NISBET, Aberdeen). Emphasis was laid on communication skills in the international sense by LEPISTÖ (Helsinki) and in the sense of training in writing technical and non-technical reports by NISBET and WRIGLEY (London) respectively. NISBET also added comparative education.

BJÖRNSSON (Stockholm) wrote: "we are more doubtful about the proposal to give the research candidate practice 'by involving him in consultation in teacher-initiated development work'. Such attempts made by the so-called experimental and demonstration schools affiliated to the Teacher-training Colleges have not been successful. This naturally does not prevent others from discovering feasible methods to achieve this goal."

4. COMPLEMENTARY RESEARCH TRAINING

Ó SÚILLEABHÁIN (Maynooth) suggested that of the six groups said to need an introduction to educational research, groups 4 and 5 "sound like luxury items" and would need very little. Introducing research to groups 2 and 3 would be difficult, and quite different from category 1. BLACKSTONE (London) also noted: "at no point do you deal with the problem of how the different needs of these heterogeneous groups can be met. My experience in running a course of master's degree level in educational policy leads me to believe that it is difficult to teach groups with such a wide variety of backgrounds together and that it is uneconomical to teach them separately." She asks for suggestions. NISBET (Aberdeen) asks how far such training is different from that outlined under 3, and to what extent it might be possible to teach these groups alongside future research workers. BJÖRNSSON (Stockholm) adds another group: "we would like to emphasise the importance of introducing the commissioners of educational research to the functions and working methods of research. This is, admittedly, a time-consuming target for the future but it is nevertheless of the utmost importance to attempt to raise the standard of their competence." Finally KYÖSTIÖ (Oulu) stresses the importance of further training courses in drawing into the field of education specialists from border areas (e.g. developmental psychologists, economists, genetic biologists).

5. CAREER STRUCTURES FOR EDUCATIONAL RESEARCHERS

"Jobs"

AVANZINI (Lyon) stated with some restraint: "the task of training researchers takes on a paradoxical air, given the lack of corresponding jobs, since we can hardly offer any real career opportunities to the researchers so trained". BJÖRNSSON (Stockholm) mentioned the

warnings of the Swedish Academics Trade Union against training too many researchers; "but it is, in our opinion, the policy adopted by government authorities which should be changed ... posts are few and far between in the educational research field". BURION (Mons) also linked the question of recruiting researchers with their very uncertain career prospects; and suggested as a possible solution employing full time researchers to head teams of part-time workers "who had maintained their taste and skills for research", detached from teaching or administration. HENRYSSON and LINDBERG (Umeå) considered it "a necessity for making improvements in the training of research students, to create favourable conditions of work for the researchers, longer and more permanent appointments, better possibilities for transfer to other fields, and reduced control of research by the authorities". THOMSEN (Copenhagen) simply noted that essential problems were touched and "as yet treated inadequately", and that their solution presupposed long and difficult discussions.

"Independence"

Besides HENRYSSON and LINDBERG (see above), de JONGHE (Louvain) "can see no good whatsoever in institutions which have only a minimum of scientific independence from the organising or controlling authorities in education.... It is essential that a legal demarcation line be drawn between the administrators of education, and researchers or scientific organisations."

"Regional Centres"

JOHANNESSON (Lund) felt that "to form an efficient link between research and application by creating regional centres is, in my view, not to be recommended. I think the best way to bridge the gap between research results and their application in schools, is to involve teachers and administrators from the very beginning, both in the planning and in the realisation of an investigation. If this is done, they are eager to apply the results in their practical school work. This type of participation furthers a better understanding of the results and makes it more probable that they will be put to practical use."

However, BURION (Mons) and others explicitly favoured the recommendation for regional centres. AVANZINI (Lyon) suggested as a useful example the 'jumelage' between the Laboratoire de Pedagogie Expérimentale of the University of Lyon II, and the research department of the local Regional Centre for Educational Information (Centre Regional de Documentation Pédagogique). The two organisations share both their building and their director, and while the laboratory trains the Centre's researchers, its own students are engaged in practical work for the Centre. However "if the structure is satisfactory, the means provided are not. Training both under-graduate and graduate students takes up too much of our time for us to be able satisfactorily to carry out large-scale research work." Nevertheless BJÖRNSSON (Stockholm) reports satisfactory results with the Pedagogical Centre (about 40 researchers). "It is only at such centres that such direct contact exists with teachers, administrators, and politicians, as can give efficient links between research and its application." Collaboration with university institutes presents no problems.

On the other hand he disagrees that "after a period of active research... the productivity of a researcher may decline." On the contrary, "research is to a great extent a craft in which one improves oneself year by year, by tackling new projects and by working with colleagues. According to your reasoning, a sculptor should after a time become a stone-cutter, an artist a house-painter. The problem is rather the opposite - namely that since clever researchers become more and more burdened with administration, committee work and teaching, they have less time for research."

6. THE PLACE OF RESEARCH IN THE TRAINING FOR EDUCATIONAL PRACTICE

The paper's contention that one priority "is to improve understanding among teachers and other educational practitioners of the function and basic principles of educational research" met with specific approval from several respondents. However, some of the criticisms under 4 apply here. Furthermore, for BJÖRNSSON (Stockholm), "to give all teachers in training 'opportunities to take part in the planning and execution of smaller investigations' is very desirable but hardly realistic. Several thousand teachers pass their degrees every year in Sweden. Extensive resources would be needed to give them all insight into research, and these resources would, to a certain extent, have to be taken from specific research work."

7. PROPOSALS FOR CO-OPERATIVE ACTION

Several respondents stated that they would be ready to collaborate actively in carrying out these proposals within the means available to them. However, JOHANNESSON (Lund) pointed out that "the proposals are excellent but it will cost a great deal of money to realise them"; and suggested that priority should be given to a scholarships and fellowships scheme as outlined in 7.6. For THOMSEN (Copenhagen), "further education for researchers through courses, including international ones, will in special cases be both possible and desirable. However, we must take into consideration what similar up-dating work is already taking place, through writings, meetings of colleagues, conferences, cross-disciplinary study groups, study tours, etc., in some cases internationally organised and oriented, and in all cases in great numbers; and ask whether there is really a need for further initiatives in this field." Lastly, NISBET (Aberdeen) said that such co-operative ventures, especially common courses, ran a risk of failing. "The major problem in international co-operation is that research workers from different countries have different attitudes and make different assumptions. Without a common basis in education, communication is difficult. This is a more serious problem than differences in language. One can learn to translate a foreign language, but it is very difficult to translate a foreign attitude or culture. If this communication problem can be overcome, there is much to be gained from international co-operation and exchange; but unless the problem is recognised, the effort may be wasted."

II. GENERAL POINTS

Several remarks concerned not specific proposals or sections of the paper, but more than one, or the whole of the preliminary conclusions and recommendations.

THOMSEN (Copenhagen) raised in a general sense the question of the influence of the users' needs on the conduct of research. "There must, of course, be a high degree of communication between educational research and educational practice. But it has to be pointed out here that at the same time both a real and a moral pressure is brought to bear on research by the different groups of users, not least to turn it primarily to questions of current interest. This may result in researchers giving users' wishes first priority within their research capacity at the expense of basic research questions. From this problem of balance trouble may arise and result precisely in 'more in quantity than in quality', as stated under para. 1."

This should be compared with SHIPMAN (London): "My first response to your paper was that the priority was wrong. I see the main problem to be the objectives of research, not the training of researchers. At present the former are not clear and hence the latter is impossible to plan... It is not bad research that is detrimental but irrelevant research. This irrelevance antagonises decision-makers and teachers and results in the isolation of research, largely in

universities, offering little of any value to educational policy and practice." Mr. Shipman thus explicitly asks for whose benefit research is carried out, referring to his own career of teacher, teacher-trainer, researcher, director of research for a local authority: "at each step away from the classroom, my influence over teachers seemed to decline. I left the university because the work I was doing was having no impact where it mattered... I have encouraged teachers to engage in modest research projects by offering the technical support of my group. This research will not advance the frontiers of knowledge. It might have an impact on practices in the schools." The question is squarely put, whether research is done to provide information for policy-making or to guide and assist teachers. On these grounds "I prefer a less systematic organisation of research even though much of the resulting work may be technically bad... I am willing to live with poorly trained researchers, especially as the training can itself eliminate initiative and remove the brains from research."

The prime question of the objectives of research is also raised by SANDVEN (Oslo). "The main problem is how to get the development of meaningful education research - theoretically interesting and practically applicable - really started.... The best way probably is to start with something concrete, 'a felt problem'... We should try to designate a number of educational problems of current interest, and then invite people to form groups to attack the problem and discuss the research needs arising, including the training aspects. This does not mean that a model for a training programme is not necessary. But I am afraid that the chances of getting such an ideal model accepted may be rather small unless it is made clear through concrete experiences that it is needed in order to enhance development in education."

Finally two other respondents ask what the follow-up to these recommendations will be. LEPISTÖ (Helsinki) says. "the problem with the conclusions and recommendations of the Working Party is not so much their form or content as what will happen afterwards. Would it be possible, after giving these recommendations to the member countries, to address an inquiry to those responsible for the planning of the training of researchers, to study the effectiveness of the recommendations, and especially the factors preventing their implementation?" ROLLER (Neuchâtel) also recommends such an inquiry, and links it with the establishment of a permanent information service concerning research training.

APPENDIX I

Comments of the Werkgroep Empirische Inleiding (Netherlands)
submitted by J. de MIRANDA, Katholicke Hogeschool, Tilburg

We agree with your explicit analysis:

- that educational research is growing more in quantity than in quality;
- that 'quality' means: empirical research, based on and guided by theory;
- that empirical research is needed for educational policy and planning.

More implicitly you mentioned the novelty of the situation in your covering letter:

- a first European Colloquium of Directors of Educational Research Organisations has been held;
- nominated experts investigated the present characteristics and deficiencies... etc.;
- the working party has proceeded all along on the assumption that their authority could not extend beyond their personal experience. For these reasons (...) consultation of (...) those actually involved in research and research organisation, has automatically become the key phase of the enquiry.

We appreciate these points as a sound basis for your enquiry into the reform of the training and career structures of educational researchers in Europe. We hope to make a usable contribution to your enquiry, based on our own experience as a ten year old working group, actually involved in research organisation.

First we have to introduce ourselves.

The "Werkgroep Empirische Inleiding" consists mainly of teachers of chemistry, physics, economics and sociology. We work according to ideas stemming from philosophy (epistemology), pedagogy and mathematical education.

From this background we oppose a modern conception of science based on the 'self-evident' supposition that classical physics ought to be seen as the model for all sciences.

In these comments I shall limit myself to some suggestions: a word to the wise is enough.

The successes of classical physics and of the whole range of natural sciences and the technology based upon them, in mastering the forces of nature, are so impressive that many scholars in the human and social sciences are tempted to imitate these successful methods beyond their genuine limits. By yielding to this temptation they are making, in our opinion, a mistake, which leads to difficulties in getting a grip on modern problem situations, e.g. in educational research.

As an argument for this proposition we mention only the following assumption of classical physics: that the scientist is investigating the properties of nature as it is "in reality", independent of human cognizance.

In the first place, modern physicists have been forced to drop this assumption, in the light of the theory of relativity and of the theory of quantum mechanics.

Secondly, in modern philosophy the "real world" we are living in is no longer contrasted with the knowing ego (Descartes) but man is included. Heidegger for instance investigates the question "what is a thing?" This investigation leads him to a better understanding of Kant's "Kritik der reinen Vernunft" and he ends by raising a new question: "Die Frage: Was ist ein Ding? ist die Frage: Wer ist der Mensch?" (1). Levinas, the great critic of Heidegger on this point agrees with him: "l'objet, tout en existant, existe pour quelqu'un" (2). Man is he for whom things come into existence.

Especially in education we have to deal with man in this sense. So, in our opinion, we cannot find a solid foundation for education, for educational research and for educational policy on the (implicit) assumption that we are educating human "objects" and that we have to investigate the "laws" governing their changing behaviour.

We agree with the tendency of the report "Learning to be" (3): "We must innovate and envisage fundamental alternatives to the very concept and structures of education" (l.c.p. 181) and - in our opinion - we must also envisage fundamental alternatives to the very concept and structure of educational research.

The best way to indicate our search for fundamental alternatives for education and educational research is perhaps to mention a book which we may suppose to be at your disposal: Hartmut von Hentig, "Magier oder Magister" (4). Von Hentig distinguishes two kinds of learnings: "das Lernen von 'Lehrbarem'", and "das Lernen von 'Gelehrtem'" (S 122). The first kind of learning indicates a fundamental alternative to the traditional second kind of learning (5). From this point of view, von Hentig discusses and rejects the systems approach of Erich Jantsch and of Niklas Luhmann.

The "Werkgroep Empirische Inleiding" is trying to develop a teaching system in which something like the first kind of learning can take place.

After this sketch of the ideas of the "Werkgroep Empirische Inleiding" we shall make some comments on your paper. All these comments can be summarized in one proposition:

We do not find in your conclusions the search for fundamental alternatives to the very concept and structures of education and of educational research.

1. For us "the educational system in relation to the goals set for it" (page 4, paragraph 5) does not seem to be a fixed datum but rather a task to be accomplished again and again.

We understand what is meant by "results that are significant (...) in reality" (p. 6 end of first paragraph), but we do not find here the notion of a man-made reality, or that of a man-spoiled reality. Is it not our task and our responsibility to design and develop a more human reality?

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(1) Martin Heidegger, Die Frage nach dem Ding, Tübingen 1962 S 180

(2) Emmanuel Levinas, De l'existence a l'existant, Paris 1947, p 75

(3) Learning to be, Unesco, Harrap 1972

(4) Hartmut von Hentig, Magier oder Magister, Stuttgart 1972

(5) See appendix

2. We agree with you that a far-reaching, trans-disciplinary, theoretical integration has yet to be achieved (p. 5 , 3rd paragraph. But in that case we might expect to find in 7. (Proposals for co-operative action) an endeavour to meet this need.

3. Which kind of empirical research is wanted now (p. 5, 4th paragraph). Is it research into educational practice in terms of traditional conceptions of education? In which respect can this empirical research be distinguished from e.g. chemical research into a chemical system?

Empirical research is said to replace speculation and informal experimentation and observation (p. 5 , 1st paragraph). In our eyes this looks like a programme of the period of the Enlightenment. In our Werkgroep we are occupied with the endeavour to overcome this contrast between speculation and empiricism. In our opinion, empiricism itself is founded on speculation and nowadays the need to discuss this speculation is often expressed.

4. Is it correct nowadays to speak of "the educational process" (p. 4 , 4th paragraph) as if it were a fixed datum in reality, and as if we have to investigate the laws governing this process in order to be able to manage it ?

See:

- research deals with the development and characteristics of the individual student ... as well as the basic conditions of learning" (p. 4. 5th paragraph)

- "the teaching situation" is described in terms of "curriculum, methods and materials of instruction, social interaction in the teaching-learning situation" (p. 4. 5th paragraph)

- "curriculum research (....) subject matter and understanding of its particular instructional requirements" (p. 5. 1st paragraph).

In our opinion this teaching corresponds only to the second kind of learning of von Hentig. But nowadays, in this world in transition, we need to design and develop a kind of teaching which corresponds to the first kind of learning of von Hentig.

As a consequence of this, we have to see educational policy and research policy as closely interrelated.

5. In our country, with a well developed research structure, there exists - in our experience - a lack of efficient links between research and application (p. 11. last paragraph ; p. 12.2nd paragraph). In our opinion this is a real problem, but we cannot expect that it will be solved by an organisation for research dissemination. We are in need of fundamental alternatives to the existing kind of research. We think that such alternatives can be designed by disciplining teachers to think and talk about their own teaching experiences. We have been working on these lines during the last ten years.

In consequence, we do not think of teaching and research policy along the lines of Jantsch and Luhman, but along the lines of von Hentig and Habermas.

6. The distinction between conclusion-oriented and decision-oriented educational research is "sometimes made" (p. 5, fifth paragraph). It seems to be a fairly useful ad hoc distinction. But without any discussion, this distinction is suggested to be exhaustive (p. 11, first paragraph). We think this points to the difficulty of replacing speculation by empirically founded knowledge (p. 5, first paragraph).

7. Academic teaching is mainly non-empirical (p. 4, second paragraph; p. 8, second paragraph). We agree with this opinion. We recognise here one of the generally accepted suppositions which von Hentig sums up in his analysis (4, S 23) ...dass man (...) durch die so beschaffene Allgemeinbildung der Spezialisierung gewachsen und dass dies überhaupt der richtige Weg sei: der Weg vom Ganzen und Verallgemeinerten zum unvermittelt Besonderen und Isolierten".

We are convinced of the twofold necessity:

- not only to train students in applying theory to practical problems, at the end of their study period,

- but also to begin this study period with practical problems of another kind, viz. problems which students - before their theoretical study - can see as their problems.

cf. "Teaching, contrary to traditional ideas and practice, should adapt itself to the learner" (3, p. 220). In this sense we are a "Werkgroep Empirische Inleiding".

Conclusion : we agree with your intention to further educational research not only in quantity, but also and above all in quality. But we have some reservations about the definition of the 'quality' needed now and in the coming years. This problem cannot be solved by the usual methods of research. Perhaps the organisation of the discussion and study of this problem could become a point for international co-operative action.

APPENDIX II

Preliminary conclusions and recommendations of the Working Party on the Training and Career Structures of Educational Researchers

Comments by Prof. Michel TARDY, Behavioural and Environmental Sciences Teaching and Research Unit, Université Louis Pasteur, Strasbourg

The preliminary paper on the training and career structures of educational researchers has been distributed to some 60 research workers for the purpose of consultation (1). This paper rightly places the emphasis on recruitment, programmes, content and methods, complementary research training, and exchanges of persons and information. This practical approach is legitimate if we are to arrive rapidly at specific proposals and effective recommendations. There is every ground for satisfaction with the efforts made, and these have already yielded considerable results.

There is, however, one other crucial question which is mentioned only on the first few pages of the report: to try to define the training of educational researchers entails a specific and detailed definition of educational research. What are the aims of educational research ? An answer must be found to this difficult, controversial question, this oft-distorted captive of partial analysis, before we can go on to ask the second question : what are the aims of training educational researchers ? Everything hinges on the coupling of these two aims, and the latter is bound to depend on the former. This is so in practice, and must also be so in any thinking based on such practice. Thus the following remarks revolve upon the meaning of educational research, on which the training of educational researchers implicitly depends.

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"The working party stresses preparation for empirical research"; the researcher's skills "should cover the methods applicable in the different phases of an empirical investigation - design, instruments, data collection, data processing, statistical analysis including the use of electronic computers, and reporting. There are also less formal procedures, such as participant observation, analysis of interviews and documents, etc., to which attention should be paid" (2).

At the outset, we cannot but applaud these suggestions. Educational practice is generally imbued with excessive subjectivity; it is so much under the thrall of opinions that we cannot but wholeheartedly invoke the overriding sovereignty of observed fact. Making evaluation of the results of education standard practice; introducing measurement into teaching and replacing what goes on in schools by quantified replicable teaching units; the objective evaluation of the effectiveness of several different teaching procedures against each other - these are all desirable innovations to the credit of educational research. It is right that the researcher should know how to draw up a research plan and control a test situation so as to allow only those variables whose effectiveness he wishes to assess. He should indeed be able to process statistically the data compiled, taking the usual precautions - testing normal distribution and standard difference. In short, no one would deny the need to introduce the experimental approach in educational research. Experimental researchers in education willingly, and quite rightly, claim descent from Claude Bernard, the author of Introduction à l'étude de la médicine expérimentale. Yet Bernard himself emphasised that there was no such thing as an average urine (3), and that the law of numbers never taught anything about specific cases (4).

The transformation of educational activity into an experimental situation is probably a step forward. But it is by no means certain that there are not other, more important advances to be made. The territory of education is an area abundant in signs: that is to say in hidden meanings which have to be uncovered; in emblematic figurative meanings lying concealed; in commemorative symbols waiting to be deciphered. The buildings, furnishings, materials and subjects are not merely instruments whose effectiveness can be measured by mathematical yardsticks; they are also vehicles of signification, the operation of which can be described in terms of the semiological model (5). Explicit codes (motion, sound, colours, numbers) are not the most important factors. The organisation of space, the arrangement of objects in the classroom, regulated movements are all unobtrusively expressive structures. The educational dialogue is full of connotations: powerful and immanent meanings flow through the linguistic signs and their combinations. Curricula, institutions and the system are all giant significants through which society addresses its members. Differentiation does indeed seem to be called for in the field of educational research: room must be made not only for causal relationships, but also for significative correlations. The sciences of explanation should not impede the development of the science of meaning.

For instance: failure at school cannot be explained only in terms of the behaviourist pattern and its ternary rhythm: motivation, instruction, and transfer. Whilst failure is statistically correlated with lack of interest, inadequate teaching procedures, and difficulty in achieving general results, it is also often an instance of semiotic behaviour, of semantic relevance. Rejection of school is often the child's indirect and only available way of expressing to those around him other, more basic and more repressed forms of rejection. Whilst failure fits into a causality pattern, it also forms part of a chain of allegory.

A second example: despite the suggestions of certain highly perceptive educationalists (6), the physical space of the school and its inside layout defy change: the layout in rows still excludes the circular; the rectangular classroom, of a fixed size, monotonously repeated, obstructs the development of a flexible, open use of space, of varying shapes and proportions. Whilst these antitheses correspond to distinct educational functions, they also have symbolic values: now and again speeches are delivered on the teaching relationship. The school layout is a physical significant and the teaching style is its corresponding expression.

The science of meaning is not merely the reconstitution of these non-linguistic systems of communication. It also entails investigating the powerful force that enables traditional forms so tenaciously to maintain their existence: exploration of the educational subconscious is accordingly one of its primary functions. Pupils are seated from right to left, depending on their school performance; miscreants are relegated for varying periods and at varying intervals to special benches, those which the Jesuits used to call "ladders to hell" (7). The teachers of the secular state are disciples of Claude d'Aquaviva, a General of the Society of Jesus, and all unknowingly base their thinking on his Ratio studiorum societatis Jesu, published in 1599. Classroom layout today is still modelled on a theological pattern of space. Imperceptibly but powerfully the sacred infiltrates the profane, and even these "sable-cloaked hussars of the Republic" conceal the ministers of religion.

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We are told that:

1. one of the purposes of educational research is the study of the goals and systems set by society, education's role in society and the structure and functioning of the educational system;

2. this research runs roughly parallel to planning operations (8).

Between these two propositions, there has been a significant semantic shift, and their intentional juxtaposition reveals an underlying principle, itself a product of the sociology of education, which makes research itself a subject for still deeper research: research is needed into educational research.

The study of goals seems to constitute not so much a critical appraisal, with the possibility of inducing desirable shifts and policy changes, or else reasoned defences of present objectives, but rather a plain systematic description of goals that exist, that are successful in sociological terms. Goals exist, are manifest in a universal, all-embracing sense: we have only to discover them, to make the effort to isolate and describe them, so that, knowing the precise nature of our objectives, we can make the material plans for achieving them. Seen in this way, research on goals means merely making the inventory of what already exists. It declines to assess the value of these goals (which would entail measuring actual goals against the yardstick of other possible goals); such research is profoundly normative: it stipulates, implicitly but firmly, that present goals are right by virtue of their existence. It is here that such "macroscopic" research shows its true face: it is not so much a matter of fundamental research, constructing and inventing, enquiring into the aims of education as they should be, but rather an executive instrument in the service of aims as they are, without the slightest intention, even provisionally and without prejudging the results of the investigation, of calling these aims into question. Any research in the social sciences, and especially in the educational sciences, is bound to be controversial, even if decked out in the clothing of wisdom and conciliation, because there is always something at stake.

Secondly, it seems to be taken for granted that present goals - to be recorded as soon as identified - are free from contradiction. Everything seems to have been planned as if the sociological function of the school was monovalent, as if opinions on school converged towards a perfect unity of views, and as if the educational expectations of the different sociological classes combined in elegant harmony. The idea of planning seems to bear out these propositions, because surely, planning does not create contradiction but overcomes it. Are we oblivious to the existence of opposing currents in the ocean of education, confusing our bearings ? How are we to reconcile the rationalisation processes (concentrating on the educational message and its successful transmission) with the processes tending to poeticise the educational relationship (focusing on the individual and his opportunities for self-creation) (9) ? How is the trend towards mass production to be coupled with the opposite trend towards individualisation in education ? How are we to combine in a harmonious whole the institutionalised school, the "parallel school" (10) and the "de-schooled society" (11) ? And so on.

Whichever way we look at the exercise of education, we find the same ambivalence: we are faced with contradictory options between which we hesitate, because we do not know how to sort them into a final synthesis. Any educational research organised solely in terms of planning will brook no contradictions. It shows by implication that the options have been

taken, rien ne va plus. The fate of educational researchers is likewise sealed; they have embarked on an adventure that holds no surprises, and whose real significance has been concealed from them. It is a good thing for educational research to give thought to the aims of education; it would be still better if it were to make a similar effort to investigate its own aims. Research on educational research is a vital and all too neglected need.

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We talk about the educational sciences: this plural is, if I may say so, singular, and we would do well to look into its significance. Alfred Binet, at the beginning of this century, coined both the phrase and the discipline of "experimental education" (la pédagogie experimentale); half a century later, Gaston Mialaret was still able to speak of a "new teaching science" (nouvelle pédagogie scientifique) (13). The singular seemed to indicate that education was a potential scientific subject, needing only the establishment of an appropriate discipline in order to exist. In these terms, a single educational science was seen as a possibility.

But to speak of the plural educational sciences, as has been common for several years, is to overturn the scientific structure of educational research. The recent International Congress of Educational Sciences (14) was divided into several sections: biology, psychology, psychoanalysis, sociology, communications sciences, and so on. Each of these disciplines, the subject matter of which is not education as such, was investigated in terms of education. This would imply that there is no such thing as an educational science, but that there are various non-educational sciences whose findings might, possibly, at a under certain conditions, be applied to teaching and education. In other words, there would seem to be non-educational factors determining the educational act (15), and it would seem to be the lot of educational research to be constantly taken outside its own field in order to return to it more effectively.

Education is the convergent point of a group of non-educational data to which the researcher has to give thought:

1. There can be no adequate thinking or research on education that does not take into account phenomena relating to the psychology of development and the sociology of small groups and institutions: the terms educational psychology and educational sociology, and their juxtaposition, mean just this.

2. Each discipline has its own specific characteristics and obeys specific constraints dictated by its specific field of relevance. Related educational research cannot therefore avoid a non-educational consideration of the characteristics of that discipline's messages: education as applied to history, for instance, cannot overlook the critical appraisal of texts and relics, nor the existence of culturally and ideologically determined tools of understanding with whose help the historian investigates the past. The general conclusion drawn from this epistemological determinant in teaching is that educational methodology must base its approach on the methodology of the corresponding discipline.

3. Investigation of the vehicles of educational communication reveals the existence of a technological factor. A teaching method that uses pictures inevitably requires prior research on the function of visual messages: audio-visual teaching is partly applied iconology. This also holds good for the spoken word: it has been said that there is a linguistic rift between teacher and students, that the

rhetoric of the lecture has an element of the pathological as a form of communication, and that the function of this speech ceremony is to enable the teacher to set up his defences and keep his audience at a distance (16). The essential point of such remarks is not so much whether the analyses presented are correct as the actual need for such analyses; not so much the right answer as the right question: language is not a natural, transparent, neutral vehicle. This is why educational research must investigate the vehicle of communication. These are investigations that take education far outside its own field, but that it cannot do without.

4. Education is bound to be governed by ethical factors. New techniques are entering the educational arena or looming on the horizon. For instance, subliminal perception (the possibility of transmitting information below the usual threshold of human perception) and hypnosis-teaching (recorded lessons softly repeated during favourable periods of sleep). Psycho-physiological research will show whether these information transmission techniques are feasible, but not whether they are legitimate. If the researcher has to study these phenomena for what they are, the educationalist, when moving on to action, must refer to non-scientific, that is to say ethical, criteria. The researcher is faced with a new task: the creation of a real code of ethics of educational behaviour, going well beyond the present small conventions, designed mainly to keep in check the particle of sub-sadism latent in any teaching act.

5. Education always sets out to modify man. It aims to replace the real man, the product of history, by a possible man. Seen in these terms, educational action is a way of making history, or at least a substantial contribution to the production of the present and future. If the purpose is to change man and hence society - or to change society and hence man - what kind of man and society are we aiming at? Every educationist has an implicit image of the man he wants to bring out of the child or adolescent in his hands. The role of research is to move on from the implicit to the explicit, in order that these normative models, these guiding principles or targets may be clearly defined, and then consciously and knowingly accepted. The philosophical or ideological factors in education cannot be denied.

This entails several consequences, the first being the conundrum of educational research - the fact that, apart from work on experimental teaching methods, such research does not appear to possess its own exclusive territory. Perhaps, after all, education is only a particular combination of non-specific factors. Thus educational research, which has no ground of its own, is dispersed in extra-educational fields. Secondly, it is hard to see just what an educational researcher's special field would be. He is a research worker without a special field. Does this mean that he is not a researcher at all (17)? This is a moot point. Thirdly, educational research is bound to be multiple. It must take education as holistic process, in which different kinds of data converge. Such research cannot be straitjacketed into either strictly 'positivist' research (for instance into what kind of typeface should be used in schools television texts) or purely pragmatic research (by which I mean the Heath Robinson inventions that pour into education's permanent inventors' competition).

We must, ultimately, bear in mind the basic uncertainty: whenever anyone speaks before an audience or puts pen to paper for potential readers, i.e. whenever anyone accomplishes an educational act, something happens, but what? Does anything remain of the words that is more than just words? No-one really knows, neither the speaker, nor the more or less attentive listener. For education is always, ultimately, an existential act.

Notes and references

1. Working Party on the training and career structures of educational researchers: preliminary conclusions and recommendations; Strasbourg, Council for Cultural Co-operation, DECS/Rech (73) 45 rev., September 1973.

2. Prep. Doc. pp.3 and 7.

3. Claude Bernard: Introduction à l'étude de la médecine experimentale, Paris, Flammarion, 1952, p. 189.

4. Ibid. p.193

5. Cf. our study: Sur quelques problèmes d'une sémiologie de la scolarité, in Sciences de l'éducation, no. 2-3, September 1973

6. P. Ferran and L. Porcher: l'aménagement de l'espace scolaire, Paris, Delagrave, 1973. Cf. also G. L. Boterf, l'espace éducatif in l'éducation, 27 September 1973, p. 11-13

7. J. Paroz: Histoire universelle de la pédagogie, 4th edition, Paris, Lib. Ch. Delagrave, 1881, pp. 131-144.

8. Prep.Doc. pp. 1-2

9. Cf. G. Snyders: Où vont les pédagogies non directives ? Paris, PUF, Coll. L'éducateur, 1973

10. G. Friedmann, L'école parallèle, in Le Monde, 7, 8, 11 and 12 January 1966.

11. I. Illich: Deschooling Society (French edition: Une société sans école, Paris, ed. du Seuil, 1971)

12. This paragraph is based on La fatigue intellectuelle, Paris, Schleicher, 1898, cited in Th. Simon's book, Pédagogie expérimentale, Paris, A. Colin, 1924, p.5.

13. G. Mialaret: Nouvelle pédagogie scientifique, Paris, PUF 1954. See also Claparède Psychologie de l'enfant et pédagogie expérimentale, 8th edition, Genève, Kundig, 1920; R. Buyse, L'expérimentation en pédagogie, Bruxelles, Lamertin, 1935; G. de Landsheere: Introduction à la recherche pédagogique, Paris, A. Colin - Bourrelier, 1964.

14. Paris, September 1973. Honorary Chairman: Maurice Debesse. Chairman: G. Mialaret.

15. See our study: Recherche: psychologiques et applications pédagogiques dans le domaine audio-visuel, in Actes du XIème Colloque de pédagogie experimentale, Liège, 1964, pp.121-134

16. P. Bourdieu and J. Cl. Paiseron: Langage et rapport au langage dans la communication pédagogique, in Les temps modernes, September 1965, No. 132, pp. 435-466

17. If we take as our reference the dominant values among present-day researchers.

APPENDIX III

The following researchers communicated to the Secretariat their comments on the "Preliminary conclusions and recommendations" of the Working Party on the training and career structures of educational researchers:

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